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7/88

ANNUAL CATALOGUE

— OF —

UNION UNIVERSITY.



1887-88.

NINETY-THIRD YEAR.

PRINTERS:
CHARLES VAN BENTHUYSEN & SONS.
1888.

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UNION UNIVERSITY.



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UNIVERSITY CALENDAR.

1888.

- Jan. 3*..... Winter term of Medical College resumes.
Jan. 9..... Winter term of Union College begins. Registration Day.
Jan. 26..... Day of Prayer for Colleges. Last Thursday in January.
Feb. 22..... Washington's Birthday, recess.
March 6..... Commencement of the College of Pharmacy.
March 15..... Commencement of the Medical College.
March 29..... Winter term of Union College ends.
April 10..... Spring term of Union College begins. Registration Day.
June 24..... Sunday, Baccalaureate Sermon, U. C.
June 26..... Meeting of Trustees, Phi Beta Kappa, Alumni; Prize speaking, Juniors and Sophomores, and Veeder Prize Contest, U. C.
June 27..... Commencement Day of Union College, *always the fourth Wednesday in June.*
June 28, 29..... Entrance examinations for Union College.
Sept. 17, 18..... Entrance examinations for Union College.
Sept. 19..... Fall term of Union College begins. Registration Day.
Sept. 18..... Winter term of Medical College begins.
October 1..... The College of Pharmacy begins.
Nov. 6..... Election Day, recess.
Nov. 29..... Thanksgiving Day, recess.
Dec. 21..... Fall term of Union College ends.

1889.

- Jan. 7*..... Winter term of Union College begins. Registration Day.

UNION UNIVERSITY.

Union University embraces the following institutions :

UNION COLLEGE,
ALBANY MEDICAL COLLEGE,
ALBANY LAW SCHOOL,
DUDLEY OBSERVATORY,
ALBANY COLLEGE OF PHARMACY.

Union College acquired by its charter, granted in 1795, full University powers, but the creation of post-graduate institutions at Schenectady was not found practicable. Schools of Law and Medicine and also an Astronomical Observatory have long existed at Albany, only a few miles distant. The arrangement naturally suggested by these circumstances was, that the professional schools and the Observatory at Albany should be united with Union College, under the charter and Board of Trustees of the latter. This was accordingly effected by the incorporation of Union University in 1873. The Albany College of Pharmacy was created by the Board of Regents June 21, 1881, and incorporated as a Department of the University August 21 of the same year.

The President of Union College and permanent Chancellor of Union University has the oversight of the University and its several institutions, each of the institutions having its resident Dean. The Dean of Union College acts in the place of the President in his absence, and also assists him in matters delegated to him by the President. The University Board of Governors is composed of permanent trustees of Union College and of representatives of each of the other institutions embraced in Union University.

OFFICERS OF THE UNIVERSITY.

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Lecturer on Political Science and the Constitutional History of the
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Dean of Union College and Nott Professor (No. 1) of the Greek Lan-
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Nott Professor (No. 3) of Analytical Chemistry

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Adjunct Nott Professor (No. 4), Principal of Union School.

HIRAM E. SICKELS, Esq.,
The Law of Evidence.

UNION UNIVERSITY.

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Personal Rights and Professional Ethics.

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Professor of Materia Medica, Therapeutics, Diseases of the Throat
and Clinical Laryngoscopy.

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Books and Judicial Systems.

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Professor of Applied Mathematics and Physics.

FRANK S. HOFFMAN, A. M.,
Professor of Mental and Moral Philosophy.

H. V. EGBERT, A. M.,
Assistant at Dudley Observatory.

BENJAMIN H. RIPTON, A. M.,
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CHARLES C. BROWN, C. E.,
Professor of Civil Engineering.

2ND LIEUT. H. H. BENHAM, 2ND INFANTRY, U. S. A.,
Professor of Military Science and Tactics.

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Adjunct Professor of Modern Languages and History.

JAMES STOLLER, A. M.,
Tutor in Natural History.

JOSEPH D. CRAIG, M. D.,
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Lecturer on Sociology.

UNION COLLEGE,

ACADEMICAL DEPARTMENT OF

UNION UNIVERSITY.

UNION COLLEGE.

UNION COLLEGE was incorporated by the Regents of the University of the State of New York, on the 25th day of February, 1795. It was the second college incorporated in the state, and the first north of the city of New York, and west of the Hudson river. It received its name from the circumstance that several religious denominations co-operated in its organization, and was the first college in the United States which was not of a strictly denominational character. It has continued from its foundation to be the representative institution of Christian unity.

The first President of Union College was the Rev. John Blair Smith of Philadelphia. He was elected in 1795, and resigned in 1799, only a few months before his death. He was succeeded by Jonathan Edwards, the younger, who died in 1801. The Rev. Jonathan Maxey, previously President of Brown University, succeeded Doctor Edwards, and resigned at the end of two years. In 1804, the Rev. Eliphalet Nott was elected President of Union College, which office he held until his death on the 29th day of January, 1866. The Rev. Laurens P. Hickok, a graduate of the college, who had long acted as vice-president, was elected his successor. He resigned in 1868. The Rev. Charles A. Aiken succeeded Doctor Hickok in 1869, and resigned in 1871. The Rev. Eliphalet Nott Potter was elected President in 1871, and inaugurated June 20, 1872. On his resignation, in 1884, the Hon. Judson S. Landon, LL. D., was appointed President ad interim, and still holds that office.

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		HON. W. H. KING, LL. D., 180 Clarke street, Chicago.
		CLARK BROOKS, 55 William street, New York.
		HON. JOHN A. DE REMER, Schenectady.
		REV. GEORGE ALEXANDER, D. D., 10th street and University place, New York.
		PETER R. FURBECK, M. D., Gloversville, term of office expiring June, 1889.
		THOS. R. FEATHERSTONHAUGH, M. D., Albany, term of office expiring June, 1890.
		HON. WARNER MILLER, LL. D., Herkimer, 1891.

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JAMES STOLLER, A. M.,
Tutor in Natural History.

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Lecturer on Sociology.

* Retired.

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WENDELL LAMOROUX, A. M.,
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Curator of the Museum.

MRS. M. L. PEISSNER,
Acting Registrar.

CHARLES W. VANDERVEER,
Director of Gymnasium.

GEORGE CLUTE,
Superintendent of Grounds and Buildings.

STUDENTS.

c, Classical; *s*, Scientific; *e*, Engineering; *ec*, Eclectic; *l*, Laboratory.

SENIOR CLASS.

<i>e</i>	THOMAS W. BARRALLY,.....	Nantucket, Mass.
<i>s</i>	NORMAN L. BATES,.....	Oswego.
<i>c</i>	CHARLES WINNE BLESSING,.....	Albany.
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<i>s</i>	EDWARD B. COBURN,.....	Troy.
<i>c</i>	PHILIP HENRY COLE,.....	Red Hook.
<i>e</i>	HOMER POTTER CUMINGS,.....	North Madison, O.
<i>c</i>	C. SCHUYLER DAVIS,.....	Schenectady.
<i>s, e</i>	JAMES MONROE DE LONG,.....	Elizabethtown.
<i>s</i>	ALLEN J. DILLINGHAM,.....	Mechanicville.
<i>s</i>	WILLIAM GIBSON GILMOUR,.....	Schenectady.
<i>c</i>	WILLIAM LOGAN KENNEDY,.....	Johnstown.
<i>c</i>	LOUIS MOSES KING,.....	Schenectady.
<i>c</i>	FRANK DUDLEY LEWIS,.....	Amsterdam.
<i>c</i>	SEELYE WILLIAM LITTLE,.....	Rochester.
<i>s</i>	HUBERT CARPENTER MANDEVILLE,.....	Elmira.
<i>s</i>	FREDERIC BARNARD RICHARDS,.....	Sandy Hill.
<i>e</i>	EDSON MASON SCOFIELD,.....	Hermon.
<i>s</i>	MICHAEL DANIEL STEVENSON,.....	Albany.
<i>s</i>	EDWARD P. TOWNE,.....	Lansingburgh.
<i>ec</i>	HARVEY JUDSON TUCKER,.....	Providence, R. I.
<i>c</i>	EDWIN HENRY WINANS,.....	Gloversville.
<i>c</i>	JOHN EDGAR WINNE,.....	Schodack.

JUNIOR CLASS.

<i>ec</i>	GEORGE C. BAKER,.....	Comstock.
<i>ec</i>	CHARLES L. BARSTOW,.....	Shelburne, Vt.
<i>s</i>	LEROY LEARNED CAMERON,.....	Albany.
<i>c</i>	EDWARD T. CARROLL,.....	Johnstown.
<i>s, e</i>	ARCHIE RANDALL CONOVER,.....	Pattersonville.
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<i>e</i>	CHARLES HENRY FLANIGAN,.....	Albany.

<i>c</i> JOHN MYERS FURMAN,.....	Schenectady.
<i>c</i> JAMES HOWARD HANSON,.....	Schenectady.
<i>s</i> ARTHUR MOREL HARDER,.....	Troy.
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<i>s</i> ERNEST VAN PIERSON,.....	Newark.
<i>e</i> JESSE BAKER SNOW,.....	Nantucket, Mass.
<i>s</i> ROBERT HOOSICK WASHBURNE,.....	Cohoes.
<i>e</i> JOHN L. WHALEN,.....	Ballston Spa.
<i>ec</i> JOHN F. WILKESON,.....	Buffalo

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<i>c</i> WILEY LEE ATHEY,.....	Holly Springs, Miss.
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<i>c</i> JOHN IRA BENNETT,.....	Hyde Park, Ill.
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<i>s</i> WILLIAM J. HARDER,....	Troy.
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<i>c</i> ELISHA TERTIUS SCHWILK,.....	Schenectady.
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<i>e</i> ALEXANDER TURNBULL,.....	Mineville.
<i>c</i> ALBERT B. VAN VOAST,.....	Schenectady.
<i>e</i> DOMINICUS STRYKER VOORHEES,.....	Brooklyn.
<i>s</i> NELSON WILLIAM WAIT,.....	Sandy Hill.

FRESHMAN CLASS.

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<i>s</i>	JOHN WELLS BURR,	Kingsboro.
<i>s</i>	RICHARD W. CHURCH,.....	Morristown.
<i>s</i>	HOWARD CONANT,.....	Amsterdam.
<i>ls</i>	FRANK COOPER,.....	Schenectady.
<i>s</i>	HERBERT CRANDALL DE PUY,.....	Sea Cliff.
<i>c</i>	JAMES E. DEWEY,.....	Johnstown.
<i>s</i>	JAMES H. DRURY,.....	Vail's Mills.
<i>ls</i>	JAMES WILLIAM FERGUSON,.....	Amsterdam.
<i>e</i>	CHARLES FISKE, JR.,.....	Kingsboro.
<i>s</i>	HARRY P. GIBSON,.....	Schenectady.
<i>s</i>	ARTHUR DENISON HULL,.....	Center Berlin.
<i>e</i>	BEEKMAN COX LITTLE,.....	Rochester.
<i>e</i>	JOHN W. MAIRS,.....	Argyle.
<i>s</i>	WILLIAM ALEXANDER McDONALD,.....	Gloversville.
<i>e</i>	HENRY W. PRESTON,.....	Rochester.
<i>s</i>	WILLIAM GILBERT ROBERTS,.....	Kingsboro.
<i>s</i>	TRACY H. ROBERTSON,.....	Elmira.
<i>ec</i>	LOUIS EDWARD ROE,.....	Mineville.
<i>s</i>	GEORGE AMBROSE ROGERS,.....	West Troy.
<i>s</i>	JOHN SMILEY, JR.,.....	Albany.
<i>ec</i>	SAMUEL EDGAR TEMPLETON,.....	Albany.
<i>e</i>	DAVID MATHIAS VAN ERS,.....	Schenectady.
<i>s</i>	THOMAS L. WALKER,.....	Schenectady.

COURSES OF STUDY.

1. CLASSICAL COURSE.

This is the usual baccalaureate course. Students may pursue additional studies in other courses. Some senior and junior studies may be exchanged for elective studies on consent of the Faculty. The modern languages are taught in addition to the ancient.

2. SCIENTIFIC COURSE.

The modern languages are here substituted for the ancient, and the amount of mathematical and English studies is increased. Latin or Greek of the Classical course may be substituted on consent of the Faculty for French or German of the Scientific. Some senior and junior studies may be exchanged for elective studies on consent of the Faculty.

3. ENGINEERING COURSE.

The instruction and practice given qualify the student for immediate usefulness in the field and office, and after a moderate amount of experience for the higher positions in the profession. On satisfactory examination he receives the degree of Civil Engineer (C. E.).

4. ECLECTIC COURSE.

Any studies in the preceding courses, making a proper amount of class work, may be taken by those found qualified to pursue them. A Certificate of Attainment is given.

5. COURSE IN ANALYTICAL CHEMISTRY.

This course includes Theoretical and Experimental Chemistry, Systematic Qualitative and Quantitative Analysis, and their applications to Medicine, Manufactures, Agriculture, Mineralogy, Metallurgy, etc. It provides special work in the Laboratory.

The Medical Lectures of the Albany Medical College are free to all Union College students; and matriculation is granted to Union College graduates without examination.

ADMISSION.

The Entrance Examinations are held on the first two days and the last two days of the summer vacation, as indicated in the Calendar; also, at the opening of any term.

Candidates must be at least sixteen years old, and as a preliminary to the Entrance Examination they must call on the President and present satisfactory testimonials of character and scholarship.

Candidates from other colleges must bring letters of honorable dismissal and pass satisfactory examinations.

Candidates for a Degree must enter before the close of the first Senior term.

Candidates not desiring a degree may be admitted by the President at any time to the Eclectic course, subject to suitable regulations.

Candidates not fully prepared may be admitted on trial, subject to conditions.

Candidates for the Freshman Classical course are examined in English Grammar and a short English composition to test spelling, punctuation, and grammar; Arithmetic; Algebra (to Series); Plane Geometry; Allen & Greenough's Latin Grammar (or an equivalent), including Prosody; Cæsar's Commentaries, four books; Vergil's *Æneid*, six books; Cicero, six Orations, including Milo; Sallust's *Catiline* or Vergil's *Eclogues*; Arnold's Latin Prose Composition, 1st part, 12 chapters; Goodwin's Greek Grammar; Goodwin's Greek Reader, 100 pages (or an equivalent); Xenophon's *Anabasis*, three books; Homer's *Iliad*, two books, and Ancient Geography.*

Those intending to pursue the Classical course should enter at the beginning of the Freshman year fully prepared; without such

* The attention of instructors is particularly directed to the student's need of a full and accurate knowledge of the Greek and the Latin Grammar. Deficiency in this knowledge will prevent admission.

preparation, time and strength needed for regular studies are consumed in making up deficiencies. If in their preparation candidates have time to spare, it is desirable for obvious reasons that they should not anticipate the college studies.

Candidates for the Freshman Scientific course or that of Civil Engineering are examined in English Grammar, Arithmetic, Algebra, and Plane Geometry, as required for the Classical course, and, in addition, History of the United States to the close of the Civil War, Hart's Rhetoric, or Welsh's Essentials of English.

Candidates for the Freshman Scientific Course are also examined in Shaw's English Literature or its equivalent, and Modern Geography.

Candidates for any other class are also examined in all studies previously pursued by that class.

The college is also prepared to hold examinations in Philadelphia, Buffalo, Chicago, or any other city where the number of candidates may be sufficient to warrant it. Application for admission to these examinations must be made to the President before June 1, and a fee of five dollars must be paid to the person appointed to conduct the examination.

When a candidate is admitted, matriculation is procured by signature to the following: *I promise on honor to perform all duties incumbent on a student of Union College in a faithful and gentlemanly manner, to the best of my ability.*

DEPARTMENTS OF INSTRUCTION.

The Greek Language and Literature.

PROFESSOR WHITEHORNE.

The course of instruction in this department extends through the Freshman and the Sophomore years and the first and second terms of the Junior. The object kept constantly in view throughout the course is not merely to teach so many works of an unknown tongue, but to instruct and educate the pupil by a system of mental training grounded upon the works of the most noble poets, dramatists, historians and philosophers of the ancient world. To this end, the pupil is taught not only to translate into accurate and idiomatic English, to analyze with great care the grammatical construction and to compare it with that of his own tongue, but especially to obtain a thorough knowledge and critical appreciation of the authors selected for his use.

Although there must be a general uniformity in the order in which different authors are read, yet no particular works are assigned to the several terms. The proficiency of each class determines the character of the book to be read.

The Latin Language and Literature.

PROFESSOR ASHMORE.

The required course in this department extends through the Freshman and the Sophomore years, and the first and second terms of the Junior year, after which it becomes elective. Besides instruction in Syntax, Etymology and Prosody, attention is given to the history and topography directly involved and to a frequent comparison of the differences in the mode of expression between the ancient language and the modern. A constant communication of collateral illustrative matter, together with lectures on the life and writings of the author immediately under consideration, form a part of the system of instruction. The course is graduated for the several years, and is subject to variation.

FRESHMAN YEAR.—First term, Livy (Bk. i); Roman History; Latin Prose Composition. Second term, Livy (Bks. xxi, xxii), or Pliny's Letters; Roman History; Latin Prose Composition. Third term, Horace, Selected Odes and Epodes; Latin Prose Composition.

SOPHOMORE YEAR.—First term, Tacitus; Latin Prose Composition. Second term, Horace, Selected Satires and Epistles; Latin Prose Composition. Third term, Terence, or Cicero, *De Officiis* or *Tusculan Disputations*; Latin Prose Composition.

JUNIOR YEAR.—First term, Juvenal. Second term, Lucretius, or Plautus or Quintilian; Archaic Latin; Latin Inscriptions.

SENIOR YEAR.—One or more of the following subjects: Selected Letters of Cicero; Cicero's Second Philippic; Cicero's Academics; Tacitus, first book of *Annals* or *History*; Catullus; Tibullus; Propertius; A Play of Seneca; Lectures.

Modern Languages.

PROFESSORS WELLS AND A. S. WRIGHT.

The Modern Languages supply the linguistic training of the Scientific course and are regular daily studies during the Freshman and the Sophomore years and two terms of the Junior year; one hour a day being given to each class, and the studies alternating according to the schedule. Instruction is imparted by exercises in translation (written and oral), conversational practice, and familiar lectures on the standard authors read.

The French Language is a regular study through six terms, beginning with the first term Freshman. The text-book mainly used is Whitney's French Course. At a later period, classical and contemporary French Literature are read.

The study of the German Language begins with the first term Sophomore. The text-books are Cook's *Otto's Grammar*, Whitney's *Reader* and the poets Schiller and Goethe.

The Modern Languages are now also a required study of the Classical Course. The Sophomore Class takes French three times a week throughout the year, and the Junior Class the same amount of German, while the Senior Class has also these languages as electives in advanced work throughout the year.

The Italian and Spanish languages are voluntary studies, and classes are formed only when the demand is sufficient to justify them.

In addition to the text-books mentioned, are recommended Spiers and Surenne's French Pronouncing Dictionary, Adler's German and English Dictionary.

Rhetoric, English Language and Literature.

PROFESSOR TRUAX.

The aim of this department is practical, and in strict keeping with the spirit of the College.

As the result of comparatively recent scholarship, it is now possible to make the study of English both interesting and in a high degree disciplinary.

The department, as constituted at Union, proposes to keep in the fore-front of this modern and rapidly progressive movement. Recognizing the worth of all the other departments of instruction, it claims as its distinct object the teaching of the art of expression, and emphasizes this as an essential of education.

The best text-books, supplemented by lectures, furnish the basis of instruction. Frequent practice in writing is, however, regarded as the chief means of giving practical value to the principles taught. In the early part of the course, the subject-matter is largely furnished to the student, in order that his attention may be concentrated upon the task of giving the best embodiment to the thought which he is required to paraphrase, develop or condense.

Words, their history and distinctions; the structure of sentences, with reference chiefly to clearness and force; and advanced Rhetoric are the subjects studied in the first year. The second year is devoted to English Literature, including the Critical Study of Masterpieces; The Philology of the English Tongue is studied in the Senior year.

In the study of the literature the ends sought are:

First. To make the student familiar with the development of English, by tracing it through all its great historical changes.

Secondly. To acquaint him incidentally, but necessarily and truly, with the environment of the literature. In this aspect, the

history of English Literature is in no unworthy sense the history of England itself.

Thirdly. To influence, in a marked degree, the formation of the student's style. As the great masterpieces are reached the manual is laid aside, and a specific author is studied directly, very much as a Greek text is read. Chaucer's "Prologue" and "Knightes Tale," Shakespeare's "Macbeth," and select essays from Addison are thus read.

By this method it is expected that the student will become acquainted with the genius of the English Language; that he will enjoy freedom from the sense of formal restraint in writing, and that his style will inevitably be influenced by that of the masters.

Essays required are of two kinds—the Formal and the Ex-temporaneous. The former are upon assigned themes, and are written out of the class-room. The latter are written in class, upon a theme announced at the commencement of the exercises, but selected from some general subject upon which the student has been directed to prepare.

Themes are selected with regard to the value of the preparatory reading, and variety is obtained by the coöperation of other departments. So far as practicable, essays are criticised orally in class as well as in writing upon the manuscript.

Original orations are required from all students above the grade of Freshman, and those of the Juniors and Seniors are delivered in the presence of the entire College.

Advanced work in English Philology and Criticism, and courses of Reading for the formation of Style will be provided for Honor Students. Direction will also be given to those students who are desirous of making special researches in this department.

Military Tactics and Physical Culture.

PROFESSOR BENHAM.

Military instruction is required work during the Freshman and Sophomore years and voluntary thereafter, and counts as other work in the College course. Neglect in attendance or instruction debars the student from the privileges of the College in the same manner as neglect of any other study.

Instruction in this department consists of drill in the school of the soldier, company and battalion, skirmish drill, target practice and military signaling.

Recitations in tactics, United States Army regulations and the Art of war, and lectures are given upon the organization of the army and volunteers for services under the General Government, military surveying, bridging, signaling, field fortifications, organization of the Supply Departments of the army, customs of the service and other military knowledge profitable to college graduates in the emergency of a war.

There is a battalion organization; students being assigned to Companies each year for instruction.

A rifle range has been provided in the College grounds, and target practice is carried on under the personal supervision of the Military Professor.

The Cadet uniforms costs from \$15 to \$20 complete.

Any student physically disabled may be excused on the certificate of the College physician, approved by the Faculty, and allowed to substitute equivalent work.

Mathematics.

PROFESSOR RIPTON.

The course of instruction in Pure Mathematics begins with the first term Freshman, and continues in the Scientific and Engineering courses, through two years, and in the Classical course through a year and two terms.

The work of the Freshman year includes, in all the courses, Higher Algebra, Solid Geometry and Plane and Spherical Trigonometry.

In the Scientific and Engineering courses, the study of Analytical Geometry and Calculus continues throughout the Sophomore year. Beginning in the first term with the Analytical Geometry, including the methods of Cartesian and of Polar Co-ordinates, with a thorough course in Conic Sections and an introduction to the study of Higher Plane Curves, the student proceeds in the second term to the study of Calculus, as essential to the successful prosecution of further mathematical study; and this work, includ-

ing both Differential and Integral Calculus, with some of their applications to the problems of Geometry and Physics, continues through the remainder of the year.

The Classical course includes one term in Analytical Geometry and one in Differential and Integral Calculus, giving at once a valuable mental training and a competent knowledge of Calculus as applied to Elementary Physics.

Descriptive Geometry is required in the Scientific and Engineering courses only. In the first term the work consists of problems in orthographic projection on two planes, tangent lines and planes, intersections of planes, cones, cylinders, surfaces of revolution, etc. In the second term the work includes the different projections of the sphere, Shades and Shadows, and Linear Perspective. In the senior year, voluntary classes are formed in some branch of the higher mathematics, Geometry of Space, Modern Algebra, Determinants, Quaternions, etc.

Chemistry.

PROFESSOR PERKINS.

In the undergraduate department, Chemistry is taught by lectures and recitations during the Junior year.

There has recently been established a regular daily two-hours course of experimental Chemistry at the Laboratory.

The Nott Laboratory is open in all branches of Chemistry for special students; especially for students of Agriculture or Medicine, Pharmaceutists, Manufacturing Chemists, Mineralogists, Metallurgists, students of Medical Jurisprudence, etc.

Those who desire to devote but a portion of their time to Chemistry can pursue other studies in the Collegiate course. No previous knowledge of the science is required, though it is highly desirable.

The course includes instruction in Theoretical and Experimental Chemistry and systematic Qualitative and Quantitative Analysis, in all their branches and in their application to the arts and manufactures.

TEXT-BOOKS AND BOOKS OF REFERENCE.

Cooke's Chemistry.	Knapp's Chemical Technology.
Craft's Qualitative Chemical Analysis.	Dana's Mineralogy.
Fresenius's Analysis.	Gmelin's Hand-Book of Chemistry.
Cooke's Chemical Physics.	Muspratt's Chemistry applied to Arts and Manufactures.
Miller's Chemical Physics.	Lehmann's Physiological Chemistry.
Miller's Elements of Chemistry.	Regnault's Eléments de Chimie.
Dalton's Physiology.	
Percy's Metallurgy.	

The fee for full course of special instruction in the Laboratory is \$35 per term; for half-day course, \$25 per term; two-hours course, \$10 per term; a deposit of \$15 for materials, etc., being required in the two first-mentioned courses, and one of \$10 in the last; the amount not consumed being returned. The expenditure varies from \$2 to \$20 a term.

For fuller information address Prof. Maurice Perkins, M. D.

Natural History.

MR. STOLLER.

In the Scientific course the study of Natural History subjects begins with a course in Biology, occupying two and three hours per week in the second and third terms respectively of the Freshman year. It is sought to acquaint the student with the methods of study of organic nature, while at the same time he gains a knowledge of the general facts of plant and animal life. Instruction is given by familiar lectures, by text-book and by practical work in the laboratory.

PHYSIOLOGY is taught in the third Sophomore term to the whole class. Instruction is given by text-book (Huxley's) and by familiar lectures; the constant aim being to make the study practical, partly by the exhibition of the organs and tissues of the lower animals and partly by directing the student to a cognizance of the processes of his own body.

ZOOLOGY is a required study for the whole class in the first Senior term. The aims are first, to give the student a knowledge of the principles of animal biology; second, to teach him to observe, compare and classify for himself the forms of animal life about

him. Instruction is given by text-book (Nicholson's) and by lectures, but it is aimed rather to stimulate the student to gain knowledge for himself than to impart it by direct information. The collections in the Museum, which are excellently adapted for purposes of teaching, are constantly used.

BOTANY is an elective study in the third Junior term. Attention is directed rather to the study of plants as living organisms than to their division into genera, species, etc. Type forms of the several groups are carefully studied, beginning with the simplest and proceeding to the highest, the comparative method being kept constantly in view. The student is taught how to analyze common plants and to determine their species by the use of a manual (Gray's).

Courses in the Natural History Laboratory are elective throughout the Senior year; they are confined to the subjects of Zoölogy and Botany. In the fall term a general course in practical Zoölogy is given, the student dissecting typical forms of the several groups of the animal kingdom, beginning with the lower and proceeding in order of increasing complexity of structure and function. The following forms are studied: an annelid, an insect, a crustacean, a mollusc, a fish, a batrachian, a bird, a mammal. In the winter term a careful dissection of one of the larger mammals is made. In the spring term a course in Practical Botany is pursued, the method being similar to that employed in Zoölogy.

Mechanics and Physics.

PROFESSOR WRIGHT.

The instruction in this department begins with the first term of the Junior year. Students in the Academical department, both of the Classical and the Scientific course, and those in the Engineering department, recite five days in the week.

To secure at once precision and fullness, the instruction is mainly given from recently prepared text-books. Frequent lectures are however delivered, either to furnish illustration and proofs of principles by experiment or to amplify particular subjects.

To test the accuracy of the knowledge gained and to ensure

its ready command, several written examinations are required in each term.

In the Senior year students may elect to pursue an advanced course in Mathematical Physics and in the Physical Laboratory.

Special attention is given to Electricity. The method of least squares with applications to physical problems is also taken up.

For the demonstration and illustration of the laws of Physics, an extensive cabinet of apparatus has been obtained from the workshops of this country and abroad.

Text-books and books of reference : Deschanel, Natural Philosophy ; Daniell, Text-book of Physics ; Goodeve, Mechanics ; Garnett, Heat ; Stewart & Gee, Practical Physics ; Ayrton, Practical Electricity ; S. P. Thompson, Electricity and Magnetism ; Day, Electric Light Arithmetic ; S. P. Thompson, Dynamo Electric Machinery ; Kempe, Electrical Testing.

History and Political Economy.

A knowledge of the facts and philosophy of history is given both by lectures and recitations. Professor Whitehorne instructs the Seniors during their third term in the History of Civilization, and President Landon lectures to them upon Constitutional Law and the History of the United States, embracing an exposition of the respective functions of the Federal and State Governments, and a discussion of many debatable points in the Science of Government. In the department of Political Economy, the student is taught the fundamental principles, prominent theories and practical issues of the subject, and thus is prepared for the intelligent prosecution of the study.

Mental and Moral Philosophy.

PROFESSOR HOFFMAN.

The studies included in this department are Logic, Psychology, Ethics, and the History of Philosophy, in all of which the instruction is given partly by lectures and partly by the use of a text-book.

LOGIC.—This is a required Junior study, and is confined to the simple elements of the science. As soon as the rules of correct thinking are mastered, the student is put at once to the analysis of

arguments, the chief purpose of the study being to develop skill in detecting logical fallacies. Jevon's *Elements of Logic* is the text-book used. Mill's *System of Logic* and Jevon's *Principles of Science* are constantly at hand for reference.

PSYCHOLOGY.—This study is taken up at the beginning of Senior year and comes five times a week through the Fall term. It is treated as an experimental science, the actual facts of experience furnishing the data; and the attempt is made to arrange and classify these facts into a system. The relation of Psychology to the other sciences is set forth, and the importance of the study is emphasized in that it lays the foundation for all the sciences of man as a political, moral, and religious being. The student is expected to furnish himself with Porter's *Elements of Intellectual Science* and Hickok's *Mental Science*. Calderwood's *Relation of Mind and Brain*, Carpenter's *Mental Physiology*, Hamilton's *Metaphysics*, and Harris's *Philosophical Basis of Theism* are used as books of reference.

ETHICS.—The study of Ethics comes four times a week during the second term of Senior year and is a required study. After Psychology has answered the question, "What is man?" Ethics endeavors to answer the question, "What ought he to do?" It embraces the two departments of pure morality and positive authority, the latter including civil government, the doctrine of the state, the nature of the divine government, and the government of the family. The required text-book is Hickok's *Moral Science*. Porter's *Elements of Moral Science*, Calderwood's *Handbook of Moral Philosophy*, and Janot's *Theory of Morals* are recommended for collateral reading.

HISTORY OF PHILOSOPHY.—This is an elective study and extends through the whole Senior year. The views of the greatest thinkers, from the earliest to the present time, on the nature of man, the validity of knowledge, the being of God, the grounds of Ethics, the doctrine of the state, and many other similar subjects are presented and freely discussed by the class under the guidance of the instructor. Special attention is also given to the individual systems of thought and their historical connection, the place of each in the evolution of thought being strongly emphasized. Text-book:

Schwegler's History of Philosophy. Books of reference: Ueberweg's History of Philosophy, Zeller's Greek Philosophy, and Bowen's Modern Philosophy.

CHRISTIAN EVIDENCES.—Instruction is also given by Professor Hoffman, during the third term Senior year, on the Grounds of Theistic and Christian Belief. The religious teaching, while distinctly and earnestly Christian, is not denominational, but, as heretofore, is consistent with the design and chartered title of the college as the representative institution of the principles of Christian unity.

ORDER AND PROPORTION OF STUDIES.

FRESHMAN CLASS.

CLASSICAL COURSE.

FIRST TERM.

Hours
a week.

- 4 Livy, Book I.
- 4 Xenophon or Homer.
- 2 Algebra Olney.
- 3 Geometry Wentworth.
- 2 English—Clearness and Force.
- Greek prose composition.
- Latin prose composition.

SECOND TERM.

- 4 Livy, Books XXI, XXII, or Pliny's Letters.
- 4 Xenophon, Homer or Herodotus.
- 4 Trigonometry Price.
- 3 English—Words, History and Distinctions.
- Greek prose composition.
- Latin prose composition.
- One Essay.

THIRD TERM.

- 4 Horace (Odes and Epodes), Cicero.
- 4 Xenophon, Herodotus or Euripides.
- 4 Algebra, completed.
- 3 English—Rhetoric.
- Greek prose composition.
- Latin prose composition.
- One Essay.

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- 3 Military Instruction throughout the year.

ORDER AND PROPORTION OF STUDIES.

FRESHMAN CLASS.

SCIENTIFIC COURSE.

FIRST TERM.

Hours
a week.

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|---|------------------------------|------------|
| 5 | French Grammar..... | Whitney. |
| 3 | Algebra | Olney. |
| 2 | Geometry..... | Wentworth. |
| 2 | English—Clearness and Force. | |
| 3 | Freehand Drawing. | |

SECOND TERM.

- | | | |
|---|--|----------------|
| 5 | French Reader..... | Bocher's Otto. |
| 4 | Trigonometry..... | Price. |
| 2 | Geometry.. .. | Wentworth. |
| 3 | English—Words, History and Distinctions. | |
| 2 | Biology. | |
| | One Essay. | |

THIRD TERM.

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|---|--------------------------|----------------|
| 5 | French Reader..... | Bocher's Otto. |
| 4 | Algebra, completed | Olney. |
| 3 | English—Rhetoric. | |
| 3 | Biology. | |
| | One Essay. | |

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|---|---|
| 3 | Military Instruction throughout the year. |
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SOPHOMORE CLASS.

CLASSICAL COURSE.

FIRST TERM.

Hours
a week.

- 3 Tacitus—*Germania* and *Agricola*.
 3 Euripides or *Æschylus*.
 3 Analytical Geometry..... Olney.
 3 English—Literature, and Critical Study of “Chaucer.”
 3 French.
 Greek prose composition.
 Latin prose composition.
 Two Essays.

SECOND TERM.

- 3 Horace—*Satires* and *Epistles*.
 3 Euripides or *Æschylus*.
 3 Calculus..... Olney.
 3 English—Literature, and Critical Study of “Shakespeare.”
 3 French.
 Greek prose composition.
 Latin prose composition.
 One Essay and one Oration.

THIRD TERM.

- 3 Terence—*Andria* and *Adelphi*; or Cicero—*De Officiis*.
 3 Euripides, Sophocles or Plato.
 3 Physiology..... Huxley.
 3 English—Literature, and Critical Study of “Addison.”
 3 French.
 Greek prose composition.
 Latin prose composition.
 One Essay and one Oration.
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- 3 Military Instruction throughout the year.

SOPHOMORE CLASS.

SCIENTIFIC COURSE.

FIRST TERM.

Hours
a week.

- 5 { French Literature ; alternate with
German Grammar..... Cook's Otto.
3 Descriptive Geometry..... Church.
4 Analytical Geometry..... Olney.
3 English—Literature, and Critical Study of “Chaucer.”
Two Essays.

SECOND TERM.

- 5 { Contemporary French Literature ; alternate with
German Grammar..... Cook's Otto.
3 Descriptive Geometry..... Church.
4 Calculus..... Olney.
3 English—Literature, and Critical Study of “Shakespeare.”
One Essay and one Oration.

THIRD TERM.

- 5 { Contemporary French Literature ; alternate with
German Reader..... Whitney.
3 Calculus..... Olney.
4 Physiology..... Huxley.
3 English—Literature, and Critical Study of “Addison.”
One Essay and one Oration.
-

- 3 Military Instruction throughout the year.

JUNIOR CLASS.

CLASSICAL COURSE.

FIRST TERM.

Hours
a week.

- 2 Juvenal or Persius.
- 2 Sophocles, Æschylus or Thucydides.
- 5 Mechanics.
- 5 Chemistry.
- 3 German.
- English—Two Essays.

SECOND TERM.

- 2 Lucretius, Plautus or Quintilian, Lectures on Archaic Latin and Latin Inscriptions, and Latin Literature.
- 2 Sophocles, Plato or Demosthenes.
- 5 Physics.
- 3 Political Economy..... Walker.
- 3 German.
- English—One Essay and one Chapel Oration.

THIRD TERM.

REQUIRED.

- 5 Physics.
- 5 Logic.....Jevons.
- 3 German.
- English—One Essay and one Chapel Oration.

ELECTIVE.

- 5 Geology.
- 3 Chemistry.
- 2 Latin.
- 2 Greek.
- 2 Mineralogy.
- 2 Botany.

At least five hours a week must be chosen from these electives.

JUNIOR CLASS.

SCIENTIFIC COURSE.

FIRST TERM.

Hours
a week.

- 5 German Reader..... Whitney.
 5 Mechanics.
 5 Chemistry.
 English—Two Essays.

SECOND TERM.

- 4 German Tragedy..... Schiller.
 3 Chemistry.
 5 Physics.
 4 Political Economy..... Walker.
 English—One Essay and one Chapel Oration.

THIRD TERM.

REQUIRED.

- 5 Physics.
 5 Logic..... Jevons.
 English—One Essay and one Chapel Oration.

Electives as on the preceding page.

SENIOR CLASS.

CLASSICAL AND SCIENTIFIC.

FIRST TERM

*REQUIRED.*Hours
a week.

- 5 Psychology..... Hickok and Lectures.
 3 Zoölogy..... Nicholson.
 English—Two Essays.

SECOND TERM.

REQUIRED.

- 5 Ethics..... Hickok and Lectures.
 English—One Essay and one Chapel Oration.

THIRD TERM.

REQUIRED.

- 3 United States Constitution and Lectures on Law.
 5 Ethics and Christian Evidences..... Fisher.
 English—One Essay and one Chapel Oration.

ELECTIVE.

- 3 History of Philosophy..... throughout the year.
 Modern Languages throughout the year.
 2 Physical Laboratory..... throughout the year.
 2 Natural History Laboratory..... throughout the year.
 Chemical Laboratory..... throughout the year.
 2 Higher Mathematics..... throughout the year.
 2 Greek..... first and second terms.
 2 Latin..... first and second terms.
 3 English—Philology..... first term.
 Historical Reading..... first term.
 2 Geology..... first term.
 2 English—Anglo-Saxon, etc..... second term.
 3 American Politics..... second term.
 4 Astronomy..... second term.
 3 History of Civilization..... third term.

From this list a sufficient number of studies must be chosen to make, with the required studies, a total of 15 hours per week.

CLASS REGULATIONS.

A daily record of attendance at class and chapel and of scholarship, is kept by the professors and is transmitted by the Registrar at the close of each term or more frequently to the student's parent or guardian.

The highest grade for recitation is Ten. Any grade below Six indicates failure.

The ten highest grades for the whole course entitle those taking them to appointment as Commencement Orators.

Absences are recorded as of three kinds, permitted, excused and unexcused. No one but the President or Dean can authorize the record of an absence as permitted.

Absences are entered against a student at the beginning of a term until he reports his return to the Registrar. A like report is required after absence because of sickness or permission.

No student in any class can be passed into the class next higher if he has any conditions unsatisfied at the close of the college year and no senior who has failed to make up all his back work by the end of the second term of Senior year, can be recommended for a degree except by an unanimous vote of the faculty.

Deficient students of the three lower classes are given the opportunity of regaining their position at the entrance examination in the September following their failure. If a student fails to avail himself of this opportunity he is excluded from his proper class and can not be restored thereto except by an unanimous vote of the faculty.

A student absent from chapel exercises five times in any term without excuse, is reprimanded ; five additional unexcused absences within the same term cause him to be put on probation, and his parent or guardian is informed ; five additional unexcused absences may cause his separation from college.

GENERAL REGULATIONS.

The first day of each term is Registration day, and no student can be admitted to the exercises of his class until he presents to the professor his registration ticket.

Students not rooming in college must report their residence to the Registrar at the beginning of the term, as also any change made during the term.

Students are not allowed to change their college rooms during term time without permission of the President; for every change a sum of two dollars is added to the term bill. Keys of rooms must be left at the Treasurer's office during vacation.

The evidence that a student's continuance in college is resulting in no adequate advantage to himself or is injurious to others, will occasion his separation from the institution.

EXPENSES.

The College term-bill includes room-rent and may thus be found as moderate as the apparently smaller bills of other institutions.

The bill for tuition and room is \$30 a term; for the Laboratory Course, as on page 28. It is to be paid within the first week of the term, reasonable postponement being granted when necessary. No deduction is made from the usual charges on account of absence from college.

The faculty are not allowed to sign any degree, certificate or dismission for any student until his bills are paid or secured.

Students, unless coming from another college, pay for entrance into the Freshman class \$5; into the Sophomore \$7; into the Junior \$9; into the Senior \$12.

The total expense of tuition, room, text-books, board, lights, washing, etc., during the three terms is about \$280. Board can be procured for about \$4 a week; in clubs for less. Furniture may be sold at the student's departure. A durable and becoming cloth suit, including cap, approved by the Military Professor, will cost \$15 to \$20. A Diploma fee of \$4 is charged to each student at graduation, and a general fee of \$8.

GYMNASIUM.

In connection with the College is a large gymnasium, which provides all the students with excellent opportunities for physical exercise. It is fitted up with well-selected apparatus, and is in charge of Mr. Charles W. Vanderveer, an experienced gymnast, who is ready at all times to advise and direct the student. The practice-room is open daily from 9 A. M. to 5 P. M.

THE LIBRARY.

The library has lately been entirely recatalogued on the so-called dictionary plan, and is now fully established in the elegant and commodious building recently erected for it by the widow of the late F. H. Powers, of Philadelphia. Among its special attractions are the excellent Engineering and Scientific library of the late Prof. Gillespie, and the rare collection of mathematical works made by the late John Patterson, of Albany.

It is open for consultation every week day from 10 A. M. to 12:30 P. M., and from 2 to 5 P. M.

Direct access to the shelves of the library is allowed to all (under certain limitations) in order that each student may secure the benefit of examining the books for himself. While the librarian is always ready to give assistance, it is hoped that the student will personally consult the indexes and catalogues, and thus acquaint himself with the use of literary tools.

In the reading room of the library will be found the current issues of the most important magazines and reviews, both American and foreign. The libraries of the Philomathean and Adelpic societies, numbering several thousand volumes each, have been incorporated with the general library, and are also accessible to the students.

THE MUSEUM OF NATURAL HISTORY.

The collections include the departments of Zoölogy, Geology and Mineralogy.

In Zoölogy all the main subdivisions of the animal kingdom

are well represented. The collections of marine forms are especially extensive, including sponges, corals, echinoderms, crustacea and mollusca. The number of specimens of birds is unusually large, and the collection of shells is one of the most complete in this country.

The department of Geology includes numerous specimens illustrative of both Lithology and Palæontology, and there are few known species of minerals of which the famous Wheatley collection does not contain some specimens.

SCHOLARSHIPS.

To a certain number of applicants the College affords liberal aid in the form of Scholarships as described below.

ORDINARY SCHOLARSHIPS.

Those in the first grade afford the incumbents at the end of each term, on condition of good conduct and diligence, a credit on the books of the Registrar to the full amount of the term-bill.

Those of the second grade yield, on the same condition, a credit to the amount of half the term-bill.

All applicants presenting testimonials of need and desert, will receive aid sufficient for the trial of one term; and the scholarships then vacant will be granted only to those who attain a certain grade for the work of that term, and who will evidently be benefited by a college course.

Ten scholarships of the first grade are awarded annually at the end of the first term of the Freshman year.

A holder of any scholarship is required to maintain a grade of eighty per cent.

JOHN DAVID WOLFE MEMORIAL SCHOLARSHIPS FOUNDATION.

The income of this Fund of Fifty Thousand Dollars, established by the generosity of Miss Catharine Lorillard Wolfe, furnishes to applicants pecuniary aid in various amounts.

LEVI PARSONS SCHOLARSHIPS FOUNDATION.

This generous benefaction of Fifty Thousand Dollars by the Hon. Levi Parsons, maintains

Two scholarships yielding three hundred dollars a year, each.

Three scholarships yielding two hundred dollars a year, each.

Eight scholarships yielding one hundred and fifty dollars a year, each ; this allowance, it is understood, to be henceforth considerably increased.

Among applicants, preference is given

1st, to blood relatives of the Founder, bearing his name and living in the county of Fulton, Montgomery or Hamilton in the State of New York, and especially to those bearing his name and living in Johnstown, Fulton county.

2nd, to applicants living in the following places according to the following order :

1. The villages (parishes) of Gloversville and Kingsborough, Fulton Co. ;
2. The township of Johnstown ;
3. The county of Fulton ;
4. The adjoining counties of Montgomery and Hamilton ;
5. To blood relatives living in any other part of the United States.

Nomination to scholarships is made by the Board of Trustees of the Levi Parsons Library of Gloversville and Kingsborough, Fulton county, N. Y., and the nominees must pass satisfactory examination at the College. Applications are received by Prof. Henry Pratt, Principal of the High School, Gloversville, N. Y.

UNION SCHOOL SCHOLARSHIPS.

These scholarships are limited to pupils of the Union School in Schenectady who are sons or wards of residents. They must bring from the Principal a certificate of preparation for college and also one of abstinence during the course from tobacco and spirituous liquors, and they must sign a like pledge for their college course. They receive a remission of \$15 on the term-bill on condition of maintaining a grade of Eight and observing their pledge.

Application for the benefit of any Scholarship Fund except the Levi Parsons Fund must be made in writing to the President of Union College or to such person as he may appoint; and it must be accompanied by testimonials from two or more responsible persons (one of whom should be the last instructor) to the fair ability, diligence and good character of the applicant, and to his real need of aid to the extent applied for.

Continuance in any Scholarship depends on the continued worthiness of the incumbent. Grade below Eight may forfeit any Scholarship.

For further information regarding Scholarships, address the President.

PRIZES.

BLATCHFORD ORATORICAL MEDALS.

The Hon. Richard M. Blatchford, LL. D., of New York city, founded oratorical prizes, consisting of two gold medals of the value of the interest on \$1,000, which are given to the two members of the graduating class who deliver at Commencement the best orations; "regard being had alike to their elevated and classical character and to their graceful and effective delivery." These medals, of the value of forty and thirty dollars, respectively, for the orations first and second in merit, are awarded by a committee of the Trustees and presented at the close of the exercises.

WARNER PRIZE.

The Hon. Horatio G. Warner, LL. D., of Rochester, N. Y., founded an annual prize consisting of silver plate of the value of \$50, to be presented at Commencement to the "graduate of Union College Classical course who shall reach the highest standing in the performance of collegiate duties and also sustain the best character for moral rectitude and deportment, without regard to religious practice or profession." The prize is awarded by the Faculty.

INGHAM PRIZE.

The Hon. Albert C. Ingham, LL. D., of Meridian, N. Y., founded an annual prize of the interest on \$1,000 (in the form of plate or medal or money, or both medal and money, as preferred), to be awarded at Commencement to that Senior connected with the college for not less than two years who shall offer the best essay on one of two assigned subjects in English Literature or History.

The Essay must contain not less than 4,000 nor more than 4,500 words. Its signature (fictitious) and the writer's real name must be enclosed in a sealed envelope; the signature and the name of the Prize being given on the outside. The Essay with the note must be presented by the first day of June.

ALLEN ESSAY PRIZES.

The Hon. Wm. F. Allen, LL. D., of Oswego, N. Y., established prizes for the best three essays on any subject, submitted by appointed members of the Senior class. They are respectively \$25, \$20 and \$15 and are presented at Commencement.

The essay must contain not less than 2,500 nor more than 3,000 words, and must be signed and presented (with note, like the Ingham Essay) by June 1st.

LATIN PRIZE.

For the encouragement of the study of the Latin Language and Literature, a prize of \$25 is offered for the present year by the Professor of Latin. This prize is open for competition to members in full standing of the three upper classes, and is to be awarded at Commencement to the student who by special examination, under conditions to be determined by the Professor of Latin, shall give evidence of the greatest attainment.

VEEDER PRIZE.

Andrew T. Veeder, M. D., of Schenectady, N. Y., founded a prize of \$50, in cash, to be awarded to that member of the college who shall deliver the best extemporaneous speech at a public competition to be held in commencement week in each year. All students in regular standing are eligible. The number of com-

petitors is, however, limited to ten, who, from the candidates presenting themselves, are chosen on the basis of their standing in the department of English Language and Literature, and with regard to the preservation of a proportional representation from the several classes. The registration of candidates takes place on the first Monday of February, when the general subject of reading is announced.

CLARK PRIZES FOR ESSAYS IN LITERATURE.

Prizes consisting of books are awarded at Commencement to the two members of the Junior class who offer the best essays on assigned subjects in English Literature.

The Essay must contain not less than 2,500 nor more than 3,000 words and must be signed and presented (with note, like Ingham and Allen essays) by June 1st.

ORATORICAL PRIZES

Are presented at Commencement to the two Juniors and the two Sophomores who deliver the best orations in composition and delivery on the occasion of Prize Speaking in Commencement week. Six Juniors and four Sophomores are selected for this competition by a Committee of the Faculty on the first Saturday in June. Candidates must be in full standing on appearance before the committee.

MILITARY PRIZES.

FIRST PRIZE; SECOND PRIZE; THIRD MARKSMAN'S CUP.

The first and second prizes of \$35 and \$20 are offered to the two students attaining the highest grades for excellence of work in this department throughout the year.

The marksman's prize, a silver cup, to be given to the student attaining the highest average in marksmanship for the year.

DEGREES AND HONORS.

DEGREES.

The degrees of the college are conferred in harmony with the Code adopted in 1880, which says: "The successful completion of either of the above courses (classical or scientific) shall entitle a student to the degree of Bachelor of Arts or of Science." The candidate for a degree must have entered college before the close of the first Senior term, have paid all dues to the College Treasurer, and returned all books borrowed from the Library. He must also attend the Conferring of Degrees, or be expressly excused therefrom. The degree of C. E. is attained as stated on page 50.

HONORS.

All Commencement prizes are limited to Classical or Scientific students in full standing who have entered at or before the beginning of the Senior year, and to Engineering students in full standing entered likewise and also in full standing in the Rhetorical Department of the Scientific course.

COMMENCEMENT APPOINTMENTS.

These Honors are assigned to the ten Seniors taking the highest grades on the Merit Roll of the class. Under present regulations, no other persons can become competitors for the Blatchford Oratorical Medals.

THE VALEDICTORY.

This honor is awarded to the Senior of highest standing among those appointed for Commencement Orations.

SPECIAL HONORS.

Special Honors are also given at graduation in each of the following departments: Greek, Latin, English Language and Literature, Mathematics, Physics, Chemistry, Natural History, including Geology, Political Economy and History, Mental and Moral Philosophy. The candidate for Special Honors must apply to the officer of the department in which he proposes to take Honors,

not later than the first Monday of the Spring Term of the Junior Year. He must attain in all the studies of the department in which he tries for Honors, a rank of not less than ninety per cent of the maximum. The evidence that he has successfully completed the extra courses prescribed for him must be submitted, not later than June first of the Senior Year, to the faculty, who shall decide in each case whether the work done is worthy of an Honor. The Honors attained are stated in the diploma, and the names of students who take Honors are printed on the Commencement programme.

A chapter of Sigma Xi has been instituted, with members of the class of 1887 as charter members. The third of the members of the Senior class in the Scientific and Engineering courses, which has the highest standing, is eligible to regular membership.

DEGREES CONFERRED

ON THE CLASS OF 1887.

A. B.

CHARLES HAMILTON ASHTON,	Centre Cambridge.
ALDEN LEWIS BENNETT,	Hyde Park, Ill.
CHARLES FRANCIS BRIDGE,	Albany.
GEORGE D. BUEL,	South Ballston.
EDWARD MADISON CAMERON,	Albany.
GEORGE WARREN FURBECK,	Little Falls, N. J.
NELSON JOSEPH GULICK,	Broadalbin.
EDWARD MATHIAS HAWKES,	Schenectady.
MATHER CRAINE HOWE,	Schenectady.
WILLIAM AUGUSTUS JAYCOX,	Garrison's.
IRVING PEAKE JOHNSON,	Schenectady.
HENRY AUGUSTUS KURTH,	Schenectady.
CHARLES ARTHUR MARVIN,	Elizabethtown.
HARLOW McMILLEN,	Seneca Falls.
CHARLES BACKMAN McMURRAY,	Lansingburgh.
EDWARD WAITE MILLER,	Montgomery.
ALBERT HENRY PEPPER,	Schenectady.
ALFRED EDWARD PHILLIPS,	Rouse's Point.
KELTON RADLIF,	Gloversville.
FRANCIS XAVIER RANDELL,	Providence, La.
NELSON MANNING REDFIELD,	Rochester.
JOHN CHARLES VAN VOAST,	Schenectady.
DOW VROMAN,	Middleburgh.

C. E.

EDWARD MADISON CAMERON,	Albany.
EDWARD WILKINS DEWEY,	Fort Plain.
ALFRED EDWARD PHILLIPS,	Rouse's Point.
NELSON MANNING REDFIELD,	Rochester.
EDWARD DWYER VERY,	Schenectady.
DOW VROMAN,	Middleburgh.

AWARDS.

VALEDICTORY.

JOHN CHARLES VAN VOAST,..... Schenectady.

COMMENCEMENT ORATIONS.

CHARLES H. ASHTON, Centre Cambridge.
 ALDEN L. BENNETT,..... Hyde Park, Ill.
 GEORGE W. FURBECK,..... Little Falls, N. J.
 MATHER C. HOWE,..... Schenectady.
 IRVING P. JOHNSON, Schenectady.
 CHARLES A. MARVIN,..... Elizabethtown.
 EDWARD W. MILLER,..... Montgomery.
 ALBERT H. PEPPER,..... Schenectady.
 DOW VROMAN, Middleburgh.

BLATCHFORD ORATORICAL MEDALS.

1st, Alden L. Bennett.

2d, George W. Furbeck.

INGHAM PRIZE.

Irving P. Johnson.

WARNER PRIZE.

John C. Van Voast.

ANDREW T. VEEDER PRIZE FOR EXTEMPORANEOUS SPEAKING.

Irving P. Johnson.

ALLEN ESSAY PRIZES.

1st, Edward W. Miller.

2d, Francis X. Ransdell.

3d, Irving P. Johnson.

JUNIOR ORATORICAL PRIZES.

1st, Philip H. Cole.

2d, John E. Winne.

SOPHOMORE ORATORICAL PRIZES.

1st, Michael Nolan.

2d, Edward T. Carroll.

UNION COLLEGE.

CLARK PRIZES.

- 1st, Philip H. Cole.
2d, Hubert C. Mandeville.

ELINOR VEEDER PRIZES.

- Prize in Electricity, Kelton Radliff.
Prize in Greek, Philip H. Cole.

MILITARY PRIZES.

- 1st, Howard T. Mosher.
2d, Clarence Johnson.

PHI BETA KAPPA.

JOHN C. VAN VOAST,
IRVING P. JOHNSON,

ALDEN L. BENNETT,
CHARLES A. MARVIN.

SCHOOL OF CIVIL ENGINEERING

OF

UNION COLLEGE.



FACULTY.

HON. JUDSON S. LANDON, LL. D.,
President.

HENRY WHITEHORNE, LL. D.,
Dean.

JOHN FOSTER, LL. D.,*
Professor of Natural Philosophy.

WILLIAM WELLS, LL. D.,
Professor of Modern Languages and Literature.

MAURICE PERKINS, A. M., M. D.,
Professor of Chemistry.

CHARLES C. BROWN, C. E.,
Professor of Civil Engineering.

JAMES R. TRUAX, A. M.,
Professor of Rhetoric, English Language and Literature.

THOMAS WALLACE WRIGHT, A. M.,
Professor of Applied Mathematics and Physics.

FRANK S. HOFFMAN, A. M.,
Professor of Logic and Psychology.

BENJAMIN H. RIPTON, A. M.,
Professor of Mathematics.

LIEUTENANT H. H. BENHAM, U. S. A.,
Professor of Military Science and Tactics.

ARTHUR S. WRIGHT, A. M.,
Adjunct Professor of Modern Languages and History.

JAMES STOLLER, A. M.,
Tutor in Natural History.

* Retired.

SCHOOL OF CIVIL ENGINEERING.

This department was founded in 1845. Its object is to give its students such instruction in the theory and practice of Civil Engineering as will qualify them for immediate usefulness in the field and office in a subordinate capacity, and at the same time fit them to fill satisfactorily the higher positions in the profession after a moderate amount of experience in the routine of practice. The course of instruction aims to effect this by constant exercise in mechanical draughting, instrumental field-work and numerical calculation, combined with lectures and the study of text-books.

The connection of the Engineering School with the College affords its students peculiar advantages for study in the various departments of the latter, to all of which they are admitted without extra charge.

The location of Schenectady is most favorable for an Engineering School. The city is on the Mohawk river and is intersected by several railroads and the Erie canal. These present many bridges and other works interesting to the Engineering student. There are also extensive Locomotive Works, Electrical Machinery Works, Machine Shops and Foundries, all of which afford special advantages for examination and study.

For information regarding Requirements for Admission, Expenses, and Terms and Vacations, see pages 20, 21, 41.

DEGREES. At the beginning of the last term of the course, students who are candidates for a diploma are required to undergo a written examination on the leading points of all their preceding studies. Those who pass it satisfactorily (and complete similarly the remainder of the course) receive a diploma conferring the degree of Civil Engineer (C. E.); and it is intended that this diploma shall be a guaranty of more than average ability and industry. The others receive certificates proportioned to what they have done both as to quantity and quality. Candidates must also have paid

all dues at the College Treasury, must have returned all books taken from the College Library and must be present at the conferring of Degrees unless expressly excused.

SPECIAL STUDENTS. Those who are not candidates for a degree, but desire to study Surveying, Road Engineering or any other special branches of the course, can enter as special students and take such studies as they require.

ARCHITECTURAL STUDENTS will find a large part of the course (particularly the Draughting, Mensuration, Stereotomy, Strength and Stability, etc.) adapted to their requirements.

COURSES OF STUDY.

MATHEMATICS.

The studies of this department include the following: Algebra, Geometry, Trigonometry, plane and spherical; Analytical Geometry, Descriptive Geometry, Differential and Integral Calculus. Optional courses in Higher Mathematics are also offered. See also page 26.

PHYSICS.

The following are the subjects included in the course: Statics, Dynamics, Hydrostatics, Hydrodynamics, Pneumatics, Optics, Acoustics, Heat, Electricity, Magnetism and Galvanism. See also page 29.

ASTRONOMY.

The instruction in Astronomy includes Spherical Astronomy, Theory of Astronomical Instruments, and Physical Astronomy.

The students are also given a practical course in Astronomical Surveying and Location, comprising the determination of time, latitude and longitude, and the location of meridians, parallels, great circles and rhumb lines.

NATURAL HISTORY.

PHYSIOLOGY is taught in the third Sophomore term to the whole class by recitations and by lectures on Comparative Anatomy and Physiology. The subjects are illustrated by preparations and dissections.

ZOOLOGY is taught in the first Senior term by recitations and lectures. The work is illustrated by constant exhibition of specimens and dissections in the class-room.

Instruction in Geology is given during the second term of the Senior year in a series of recitations and lectures, from sixty to seventy in number.

LITHOLOGICAL GEOLOGY. The attention of the student is first directed to a carefully identified series of specimens, and the methods and tests used in identification are given. Then unnamed specimens are given him, the nature and constitution of which he is expected to determine by comparison and by application of the proper tests.

PALÆONTOLOGY. By the examination, on the part of the student, of fossils especially characteristic of the principal formations and by lectures, the attempt is made to familiarize the mind with the more important forms of extinct animal and vegetable life. The conditions favorable and unfavorable to the preservation of such forms in the rocks are also considered. Facilities for special study of Palæontology are placed at the disposal of the student without extra charge.

HISTORICAL GEOLOGY is taught, including the different conditions under which the rock-masses occur, the order of the succession of the formations in time, etc.; also,

DYNAMICAL GEOLOGY. The nature and origin of coal, peat, coral reefs, salt; the action of water in erosion, transportation, etc.; of frozen water, glaciers, icebergs; the various theories of volcanic action; earthquakes and the origin of mountains; metamorphisms; veins, etc.

MINERALOGY is taught during the third Senior term by a course of practical lessons, illustrated by a complete set of models of crystals and a series of six hundred specimens for determination by crystallographic and blow-pipe examination.

BOTANY is taught during the Summer term, both from text-book (Gray's) and practically in the field.

CHEMISTRY, MINERALOGY AND METALLURGY.

The recitations in Chemistry extend through three terms. In addition to this, the students receive Laboratory instruction. They are taught by means of qualitative analysis and exercise in the use of the blow-pipe to determine the constitution of the useful minerals. Their knowledge of these minerals is increased by a course in determinative mineralogy, in which use is made of the celebrated Wheatley Collection and a complete set of crystal models. As far as practicable, the operations of industrial chemistry are carried out. Students are taught to tin zinc and to gild iron; to electroplate with gold, silver, copper and nickel; to form the various sulpho compounds from pyrites; to burn plaster, lime and cements, and to analyze and test their efficacy; to make and examine the most important alloys; to estimate clays for buildings and fire-brick, and for the manufacture of porcelain; to analyze fuels, slags and fluxes.

The student is required to go through a thorough course in assaying, treating ores of lead, silver, copper, mercury and gold. Attached to the Laboratory is a library of technological books always open to the students for reference.

Detached from the Laboratory is a photographic room, with skylight, printing-room, etc., and instruction is given by a practical photographer.

MODERN LANGUAGES.

See page 23.

RHETORIC AND ENGLISH.

The instruction in English is eminently practical, and has especial reference to the clear and forcible presentation of a subject by the student. The full course in English and Rhetoric, as laid down on pages 24, 25, is required of Engineering students through the first term Sophomore, and opportunity is offered and students are urged to continue the course throughout. Two essays are required from each student in the Engineering Course each term during the remainder of the course; one each term upon a literary subject under the direction

of the Professor of English, and one each term upon a technical subject, the object being to give the Engineering student as much opportunity as possible for practice in the proper presentation of a subject, and at the same time to increase his general knowledge of subjects connected with his chosen profession. The literary essays of the second term Sophomore, Junior and Senior take the form of orations.

DRAWING AND DESCRIPTIVE GEOMETRY.

The instruction in this department extends throughout the entire course.

In the first and second terms Freshman the student is instructed in free-hand drawing, in the use of drawing instruments and the construction of geometrical problems, conventional colors, and drawing in plan, elevation and section. Drawings are made from models and from engineering structures. In the third term Freshman, plotting of actual surveys made by the class and methods of representing topographical features are taught.

In the first and second term Sophomore the student is instructed in Descriptive Geometry (orthographical projection). The drawings of intersections, developments, etc., are from Schroeder's models, the Paris Polytechnic School models of intersections, and the Olivier models. The course includes Spherical Projections, Shades and Shadows and Perspective. In the second term he is instructed in the elements of Machine Drawing. In the third term practice is given in Topographical Drawing and Plotting, and methods are given of representing the relief of ground by contour lines, hatchings and shades from vertical and oblique light, Bardin's models of the various forms of ground being used to illustrate the subject.

In the Junior year are taught oblique projections, including mechanical, military and isometrical projections and the construction of problems in graphics.

In the Senior year instruction is given in making drawings for road surveys and construction; in designing of engineering structures, including detail drawings of constructions in wood and iron;

and in stereotomy and the theory of the arch, with drawings from the stereotomy models of the Paris Polytechnic School.

ENGINEERING.

The subjects of the course are so arranged as to harmonize with the seasons of the year suitable to field-work or other work. The course includes the following subjects :

SURVEYING. Land surveying with chain alone, chain and compass, transit, theodolite, plane-table and solar compass ; Mining Surveying ; Hydrographical Surveying ; Topographical Surveying ; Geodetic Surveying, and Astronomical Surveying and Location.

LEVELING with the plumb-line level, water level and spirit level ; Angular Leveling, and Barometric Leveling.

MENSURATION of engineering structures.

ROAD ENGINEERING, comprising the reconnaissance, location and construction of common roads and railroads ; the improvement of the surface of common roads, graveling, macadamizing, paving, planking, etc. ; the construction of railroads, including earthwork, mechanic structure, superstructure and equipment.

ENGINEERING STATICS. Statical forces, weights of bodies, fluid pressure, semi-fluids, heat, cold, animal force, etc. ; dynamical forces, solids in motion, impact, pile-driving, waves, wind, etc.

STRENGTH OF MATERIALS. Data and formulas for calculating the resistance of materials to extension, compression, torsion, bending and breaking.

STABILITY OF STRUCTURES. Data and formulas for calculating the resistance of frames, roofs, bridges, retaining-walls, arches, etc., against dislocation, overturning, sliding, etc.

GENERAL CONSTRUCTION. Materials, foundations, masonry, carpentry, etc.

BRIDGE ENGINEERING. Plans and calculations of the forms and dimensions of bridges of wood, iron or stone. A working model of a bridge, in which the strains at various points are shown by a dynamometer, illustrates the identity of the results of theory and experiment.

WATER ENGINEERING. Hydraulic formulas, the supply of water for towns and for irrigation, the removal of water by drainage and sewerage, canals, the improvement of river navigation, harbors, sea-coasts, etc.

AGRICULTURAL ENGINEERING.

SANITARY ENGINEERING.

FIELD-WORK. The instruction is made as practical as possible. The students have constant practice in the field whenever the weather will permit. The field-work consists in Land Surveying with the compass and chains, etc.; Triangular and Trilinear Surveying and the use of the transit, solar compass and plane table; Common, Trigonometric and Barometric Leveling and the use of the spirit-level, water-level, theodolite and barometer; Road Engineering, comprising the reconnaissance and location of a line of road, leveling the line, running curves, staking out side-slopes and foundation pits, etc. (a corps for road-engineering being regularly formed, and each student taking in turn the position of flagman, chainman, rodman, leveler and transitman); Astronomical Surveying and Location and the use of the sextant.

VOLUNTARY STUDIES.

Any of the studies of the Classical or of the Scientific course of the college can be taken by the Engineering students without extra charge. Many avail themselves of this opportunity for special study in Ancient Languages, Natural History, Mental and Moral Science, Rhetoric, Logic, etc.

INSTRUMENTS AND APPARATUS.

This department is fully supplied with field instruments of the best description, comprising a large Theodolite suitable for refined geodetic operations, Transits, Surveyor's Compass, Prismatic Compass, Burneir's Compass, Solar Compass, Y Levels, the Levels of Troughton, Egault, Lenoir and Burneir; Plane Table, Sextant, Octant, Mountain Barometers, Aneroid Barometer and a Chronometer.

The extensive private collection of models and instruments belonging to the late Professor Gillespie has been purchased for the department, making the entire collection the most complete in the country.

The collection of models in Descriptive Geometry and Stereotomy is very complete. The following are some of the most important:

THE OLIVIER COLLECTION. This consists of 'about fifty models representing the most important and complicated ruled surfaces of descriptive geometry, particularly warped or twisted surfaces. Their directrices are represented by brass bars, straight or curved, to which are attached silk threads representing the elements or successive positions of the generatrices of the surfaces. Each of these threads has a weight suspended by it so as always to make it a straight line. These weights are contained in boxes sustaining the directrices and their standards. The bars are movable in various directions, carrying with them the threads still stretched straight by the weights in every position they may take; so that the forms and natures of the surface which they constitute are continually changing, while they always remain ruled surfaces. In this way a plane is transformed into a paraboloid, a cylinder into a hyperboloid, etc.

These models were invented by the late Théodore Olivier, while Professor of Descriptive Geometry at the Conservatoire des Arts et Métiers, in Paris. One set of them is now deposited there, and a second is in the Conservatory of Madrid. Copies of some of them are to be found in most of the polytechnic schools of Germany. The Union College set is the original collection of the inventor, having been made in part by his own hands, and after his death in 1853 retained by his widow till bought from her by Professor Gillespie in 1855. It is more complete than that in the Paris Conservatoire. It may be worth noticing that the silvered plates on the boxes, reading "Inventé par Théodore Olivier," etc., were added by Madame Olivier, at her own expense, after the purchase, as a tribute to the memory of her husband; her own words being, "*Je tenais à ce que chaque instru-*

ment portât le nom du savant dont la réputation passera à la postérité."

Among the most remarkable peculiarities of these models are their experimental demonstrations of various important theorems of Higher Geometry; as also the suggestion of a close relationship of dissimilar forms, if not their essential identity; since the movements which the various parts admit cause one surface gradually to pass into another as in a dissolving view; so that, for example, a plane is seen to be only a particular case or limit of a hyperbolic paraboloid; a cylinder and a cone to be only extreme cases of a hyperboloid of one sheet, etc. At the same time the singular beauty of form and color which the models possess arouses the admiration of those entirely ignorant of their mathematical attractions.

Prof. Bardin's (Paris) plaster models (seventy) of the INTERSECTIONS of prisms, pyramids, cylinders, cones, etc.

Schroeder's (Darmstadt) models (twenty) of elementary DESCRIPTIVE GEOMETRY. The planes of projection are in wood, and the lines and surfaces in metal; metals illustrating Shades and Shadows.

STONE CUTTING models (twenty) in plaster, selected from those of L'École Polytechnique of Paris.

Prof. Bardin's models (ten) in plaster, of OBLIQUE ARCHES.

Groined and cloistered arch models (ten) in wood and plaster. Models of structures in stone, consisting of bridges, culverts, etc.

Winding-stair models in wood and plaster. Full-sized models of voussoirs and skew-backs of an oblique arch.

MODELS IN TOPOGRAPHY. French and German plaster models giving all the different forms of ground, accompanied by topographical drawings showing how to represent these forms by contour lines, hatchings and shades from vertical and oblique light; models and maps in colored topography; a large model of Mount Cenis Pass, showing the wagon-road and contour lines.

ARCHITECTURE. Models of the five orders of Architecture from L'École des Beaux Arts, Paris; portals; stairs; roofs; walls; buttresses; domes, etc.

ENGINEERING. Schroeder's models of joints, brick bonds, etc.; spur wheels; bevel wheels; cranes; pile-driver; various forms of water-wheels; pumps; cylinders; valves; eccentrics, etc.; steam engines.

Casts of St. Venant's models showing the changes of form in bodies subjected to flexure. Full-sized model of the liquid vein measured by Poncelet and Lesbros.

Models of Bridges on various systems, comprising truss, suspension, tubular and arch bridges; Doyné's Dynamometer Bridge Model, showing by means of a dynamometer strains at different points; models of roof trusses, arranged for using the dynamometer to show the different stresses.

Models of Fortifications, illustrating Vauban's system; shot, shell, etc.

Models of Culverts, Piers, Abutments, Culvert Heads, Recess Pool, Wing Walls, Rail Sections, etc.

PHYSICAL APPARATUS.

See page 30.

COLLECTIONS IN THE DEPARTMENT OF CHEMISTRY.

IN MINERALOGY. The Wheatley collection contains nearly 4,000 specimens of minerals, the results of the labors of Charles M. Wheatley. All of these have been labeled according to the nomenclature and order adopted by Dana. They are without exception open at all times to the students. They furnish an admirable means of practical illustration in Mineralogy. Among the rare and valuable specimens are those of Anglesite, Cerusite, Mimetime and Calcupyrite, which in American specimens are equaled only by those in the British Museum. There are many fine specimens representing the noble metals from all parts of the world. There are few known species of minerals of which the collection does not contain some specimens.

In addition to this there is a large series of unlabeled specimens for crystallographic and blow-pipe examination.

IN METALLURGY. The college possesses a suite of ores of

the useful metals comprising over 1,000 specimens. These have been arranged to illustrate their mode of occurrence and geographical distribution. In addition are the fluxes, fuels, etc., used in obtaining the metals from the ores, together with the slags and metals themselves in various forms. There is a large number of models and drawings of stacks, furnaces, etc.; also suites of specimens of wood, charcoal, mineral coal, peat, etc., both for actual examination and for physical inspection; also specimens of most of the useful alloys.

IN INDUSTRIAL CHEMISTRY. A large number of specimens of the materials used in the manufacture of the mineral and of some of the organic acids; the crude products themselves and the materials used in the manufacture of the alkalies, soaps, matches, black lead, candles, petroleum products, linseed, olive, castor, cotton-seed and other oil, paper, porcelain, glass, fire and building brick, mortar and cements, beet and cane sugars, white lead and other paints, etc., etc.

IN AGRICULTURAL CHEMISTRY. For the study of this branch of chemistry the college has a large suite of specimens of manures, natural and commercial, together with the apparatus for their analysis and also for the analysis of soils.

The Chemical Laboratory is well furnished with apparatus for work, both in analytical and manufacturing chemistry.

MAPS, DRAWINGS, ETC.

This collection embraces a large number of maps, plates, profiles, topographical drawings and spherical projections; about fifty thousand engravings, lithographs, photographs, and detail drawings of engineering and architectural structures; working drawings of machines, bridges, buildings, etc.

LIBRARY.

The students have the use of the College and Society Libraries. The former contains the Engineering and Scientific Library of the late Prof. Gillespie. An endowment of twenty thousand dollars enables the library to keep up with the advance of science.

PHYSICAL CULTURE.

The students are instructed in military tactics by an officer of the U. S. Army; and a large gymnasium, completely furnished, affords ample opportunities for physical training.

For catalogues or special information, address CHAS. C. BROWN, Schenectady, N. Y.

ORDER OF STUDIES.

CIVIL ENGINEERING COURSE.

FRESHMAN CLASS.

FIRST TERM.

Hours
a week

- 5 French Grammar.
- 3 Algebra.
- 2 Geometry.
- 3 Freehand Drawing.
- 2 English.

SECOND TERM.

- 5 French Reader.
- 2 Geometry.
- 4 Trigonometry.
- 2 Drawing.
- 3 English.
- One Essay.

THIRD TERM.

- 5 French Reader.
 - 4 Algebra.
 - 3 Surveying.
 - 3 English.
 - One Essay.
-

Military Instruction throughout the year.

SOPHOMORE CLASS.

FIRST TERM.

- 5 French Literature, alternate with German Grammar.
- 3 Descriptive Geometry.
- 4 Analytical Geometry.
- 3 English Literature.
- Two Essays.

SECOND TERM.

- 5 French Literature, alternating with German Grammar.
- 4 Calculus.
- 3 Descriptive Geometry.
- 3 Mechanism and Machine Drawing.
- 3 English (voluntary).
- One Essay.
- One Oration.

THIRD TERM.

- 5 French Literature, alternating with German Grammar.
- 3 Calculus.
- 2 Higher Surveying and Leveling.
- 2 Botany.
- 4 Physiology.
- 3 English (voluntary).
- Two Essays.

Military Instruction throughout the year.

JUNIOR CLASS.

FIRST TERM.

- 1 Advanced Calculus.
- 5 German Reader.
- 5 Mechanics.
- 5 Chemistry.
Two Essays.

SECOND TERM.

- 4 German Literature.
- 5 Physics.
- 3 Analytical Mechanics.
- 3 Chemistry.
One Essay.
One Oration.

THIRD TERM.

- 5 Physics.
- 3 Strength of Materials and Stability of Structures.
- 2 Surveying.
- 2 Graphical Analysis of Structures.
- 3 Chemistry (Organic).
- 5 Logic (voluntary).
Two Essays.

SENIOR CLASS.

FIRST TERM

Hours
a week.

- 3 Graphical Analysis of Structures.
- 5 Road Engineering.
- 3 Zoölogy.
- 3 Materials of Construction.
- Two Essays.
- Elective*, as follows :
- 2 Physical Laboratory.
- Chemical Laboratory.
- 2 Natural History Laboratory.
- Modern Languages.
- 2 Higher Mathematics.
- 2 Geology.
- 5 Psychology.
- 3 History of Philosophy.

SECOND TERM.

- 5 Geology.
- 4 Engineering Design.
- 4 Astronomy.
- 2 Steam Engine.
- One Essay.
- One Oration.
- Elective*, as follows :
- 2 Higher Mathematics.
- 2 Physical Laboratory.
- 2 Natural History Laboratory.
- Chemical Laboratory
- Modern Languages.
- 5 Ethics.
- 3 History of Philosophy.
- 3 American Politics.

THIRD TERM.

- 3 Engineering Design.
- 2 Hydraulics.
- 3 Stereotomy and Theory of Arch.
- 5 Mineralogy and Blowpipe Analysis.
- 1 Thesis.
Two Essays.
Elective, as follows :
- 2 Higher Mathematics.
Modern Languages.
Chemical Laboratory.
- 2 Physical Laboratory.
- 2 Natural History Laboratory.
- 3 History of Philosophy.
- 3 History of Civilization.
- 3 U. S. Constitution, and Lectures on Law.

Elections sufficient to give at least fifteen hours a week in each term, must be selected and added to the work set down as required.

GENERAL CATALOGUE AND OBITUARY RECORD.

A General Catalogue of the Graduates of Union College, regular and honorary, is prepared from time to time and also an Obituary Record is kept; the yearly additions to the latter being presented at each Commencement meeting of the Alumni. The last General Catalogue was completed in 1884, and can be obtained by sending \$2 to the College Treasurer.

Alumni are requested to send their address to the College Treasurer for insertion in the next General Catalogue; and friends of any deceased Alumnus will confer a favor by sending to the Treasurer a brief notice of his life.

ALBANY MEDICAL COLLEGE,

MEDICAL DEPARTMENT OF

UNION UNIVERSITY.

FIFTY-SEVENTH SESSION.

ALBANY MEDICAL COLLEGE.

The Medical College building, situated on Eagle street, is well appointed in its lecture rooms, laboratories, dissecting room, library and museums. Extensive improvements have been made to the building during the last few years, a large and perfectly arranged dissecting room having been built in the upper story, furnished with every convenience for the use of the classes in practical anatomy, together with a private dissecting room and a physiological laboratory. Special arrangements have been made by which an abundant supply of material is secured. The chemical laboratory has been rebuilt, and a two-story building erected, fitted with every requisite for the illustration of the lectures and the use of the students in practical chemistry, while "Alumni Hall," constituting the south wing of the college building, has been greatly improved and refurnished throughout. The classes in histology and pathological anatomy meet in this room, and other exercises are here held. The amphitheatre was remodelled during the summer of 1887 and furnished with folding opera chairs and the building heated throughout by steam.

The location of the college at Albany is such as to afford superior advantages to the student. The hospitals and dispensaries furnish always an abundant supply of material for the illustration of clinical medicine and surgery, while the museums are especially rich in anatomical and pathological preparations, unequalled in their variety and rarity. The library of the college contains nearly 5,000 volumes, and additions to it are constantly being made.

The Albany Hospital, St. Peter's Hospital, Child's Hospital, County Hospital, together with the Eye and Ear Infirmary and the Dispensaries connected with each, are, by the regulations of their governing boards, made available for clinical purposes to the students.

The appointments to positions in the Albany Hospital and St. Peter's Hospital as resident physician and surgeon and first and second assistants are annually made and competed for by members of the graduating class.

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AMASA J. PARKER.

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WILLIAM L. LEARNED,
MATTHEW HALE,
DAVID MURRAY,

JOHN M. CRAPO,

MAYOR OF ALBANY, } *Ex-officiis.*
RECORDER OF ALBANY. }

CURATORS.

SAMUEL H. FREEMAN, M. D.,	- - -	Albany, N. Y.
WILLIAM H. CRAIG, M. D.,	- - -	Albany, N. Y.
JAMES D. FEATHERSTONHAUGH, M. D.,	-	Cohoes, N. Y.
LE ROY McLEAN, M. D.,	- - -	Troy, N. Y.

FACULTY.

THOMAS HUN, M. D., LL. D.,
Dean of the Faculty and Emeritus Professor of the Institutes of
Medicine.

ALBERT VANDER VEER, M. D., Ph. D.,
Professor of Surgery and Clinical Surgery.

MAURICE PERKINS, M. D.,
Professor of Chemical Philosophy and Organic Chemistry.

JOHN MILTON BIGELOW, M. D.,
Professor of Materia Medica, Therapeutics, Diseases of the Throat
and Clinical Laryngoscopy.

LEWIS BALCH, M. D., Ph. D.,
Professor of Anatomy and Medical Jurisprudence.

SAMUEL BALDWIN WARD, M. D., Ph. D.,
Professor of Pathology, Practice, Clinical Medicine and Hygiene.

JAMES PETER BOYD, M. D.,
Professor of Obstetrics, Gynecology and Diseases of Children.

WILLIS GAYLORD TUCKER, M. D., Ph. D., REGISTRAR,
Professor of Inorganic and Analytical Chemistry and Toxicology.

WILLIAM HAILES, M. D.,
Anthony Professor of Histology, Pathological Anatomy and
Clinical Surgery.

CYRUS STRONG MERRILL, M. D.,
Professor of Ophthalmology and Otology.

FRANKLIN TOWNSEND, M. D.,
Professor of Physiology.

ALBANY MEDICAL COLLEGE.

FREDERIC COLTON CURTIS, M. D.,
Professor of Dermatology.

HENRY HUN, M. D.,
Professor of Diseases of the Nervous System, and Psychological
Medicine.

SAMUEL ROSEBURGH MORROW, M. D.,
Adjunct Professor of Surgery and Lecturer on Anatomy.

JOSEPH DAVIS CRAIG, M. D.,
Demonstrator of Anatomy.

ASSISTANTS IN THE FOLLOWING DEPARTMENTS:

ELMER EGBERT LARKIN, M. D.,
Surgery.

DANIEL H. COOK, M. D.,
Materia Medica.

JOSEPH DAVIS CRAIG, M. D.,
Anatomy.

SELWYN ABIJAH RUSSELL, M. D.,
Clinical Medicine.

ALBERT MARSH, M. D.,
Obstetrics.

THOMAS HINCKLEY WILLARD, M. D.,
Histology.

THEODORE FRELINGHUYSEN CORNELL VAN ALLEN, M. D.,
Ophthalmology.

JOHN VINCENT HENNESSY, M. D.,
Physiology.

MATRICULANTS

OF FIFTY-SEVENTH SESSION, 1887-8.

WILL A. ALEXANDER,.....	Albany.
ROBERT MATTHEW ANDREWS,.....	Guilderland.
HORATIO SEYMOUR ANSLEY,.....	Albany.
JOHN ARCHIBOLD,.....	Cohoes.
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EDMUND JOSEPH BLAKE,.....	Albany.
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HENRY WILSON BROWN,.....	Albany.
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CLEMENT SALTS CROSBY,.....	Bethlehem.
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JOHN JOSEPH EVANS,.....	Ithaca.
THOMAS HENRY FLYNN,.....	Albany.
ANDREW WATERS FORD,.....	Troy.
WILLARD HENRY FOX,.....	Minaville.
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FRANK MORGAN HALL,.....	Luzerne.
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HURAND HAROOTUNE HEKIMIAN,.....	Turkey, Asia.
THOMAS HELME, JR.,.....	McKownsville.
ALFRED FREDERICK HODGMAN,.....	Fort Edward.
MATHER CRANE HOWE, A. B.,.....	Schenectady.
WILLIAM HUTCHINSON, A. B.,.....	Thorndike, Mass.
HENRY JOHN HUNTER,.....	Ilion.
ELMER ELLSWORTH JOHNSTON,.....	Albany.
MICHAEL KEENAN, JR.,.....	Dannemora.
JAMES BENEDICT KENNAH, A. B.,.....	Albany.
JOHN WARNER KNISKERN,.....	Carlisle.
THOMAS CLARK LAWLER, A. B.,.....	Albany.
WILBUR FISKE LA MONTE, A. B.,.....	Richmondville.
MARK STANISLAUS LEAVY,.....	Albany.
FRANK HERBERT LEE,.....	Sheffield, Mass.
GEORGE GUSTAVE LEMPE,.....	Lansingburgh.
ELLIS LENGFELD,.....	West Chazy.
EDWIN CAMERON LIVINGSTON, A. B.,.....	Ithaca.
GEORGE EMORY LOCHNER,.....	Albany.
ARCHIBALD GOW LOSEE,.....	Albany.

FREDERIC WILLIAM LOUGHRAN,.....	Albany.
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JAMES HENRY LYONS, A. B.,.....	Schaghticoke.
JOHN JOSEPH LYONS,.....	Schaghticoke.
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MYRON EBENEZER STEPHENS,.....	Frankfort.
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JAMES READ STRANG,.....	Ketchum's Corners.

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JAMES HENRY TOBIN,	Albany.
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FRANK AUGUSTUS WINSHIP,	Eagle Mills.
ADELBERT WARNER WITTER,	Berne.
MERLIN JAY ZEH,	Berne.

CALENDAR, 1888-9.

1888.

Regular winter session begins,	. Tuesday, September 18.
Election vacation begins,	. . . Monday, November 5.
Lectures resumed,	. . . Thursday, November 8.
Thanksgiving vacation begins,	. Thursday, November 29.
Lectures resumed,	. . . Monday, December 3.
Christmas vacation begins,	. . . Saturday, December 22.

1889.

Lectures resumed,	. . . Wednesday, January 2.
Commencement,	. . . Wednesday, March 13.

PRELIMINARY EXAMINATION. (Held during first week of session.) Graduates from recognized academies, colleges, colleges of pharmacy, scientific schools or like institutions, and students presenting regents' or teachers' certificates or certificates of competency from the president or censors of the medical society of the county from which they come, will not be required to pass the preliminary examination on entering the school.

All others will be required to pass an examination, by a page written at the time, of which the orthography, grammatical construction and penmanship will be considered, and in arithmetic, grammar, geography, and the elements of natural philosophy.

MONTHLY WRITTEN EXAMINATIONS of the candidates for primary or final examinations are held during the term. A printed schedule of the times for these examinations is furnished the class.

EXAMINATIONS IN PRIMARY STUDIES. Students who have attended two full courses of lectures in the departments of Anatomy, Physiology, Materia Medica and Chemistry, may be examined on these subjects at the close of the term, and if the examinations are passed satisfactorily they are examined only in the other three departments (Surgery, Practice and Obstetrics) at the end of their third course.

COURSE OF INSTRUCTION.

Six or more lectures are delivered each week day except upon Saturday, when the forenoon only is occupied. Laboratory and dissecting classes, quizzes, etc., are arranged to meet at hours which do not conflict with the lectures. (For order of lectures and clinics see the Catalogue of the College, which will be sent to any address on application to the Registrar.)

THREE YEARS' GRADED COURSE—DIVISION OF SUBJECTS.

The three years' course now required in this college (save as stated in the requirements for graduation) includes two full courses of lectures upon each subject as follows: The first year the primary branches, anatomy, materia medica, physiology and chemistry shall be attended, and practical anatomy studied in the dissecting room, while the laboratory courses in chemistry and histology may be most advantageously pursued during this course. The second year the full course of lectures shall be attended, and at its conclusion the student may present himself for examination in the primary branches, and if these be passed satisfactorily, the third year the lectures upon theory and practice, surgery, obstetrics and the allied branches only need be attended. Students have the privilege of attending any or all other lectures if they deem it advisable, and if they fail to pass one or more of the primary branches, are examined upon such branch or branches at the end of the third year.

LABORATORIES.

PRACTICAL CHEMISTRY. The laboratory is open during the entire year, students being received singly or in classes, for instruction in chemical analysis and medical chemistry. It is well lighted and conveniently arranged. Each student has a desk and chemicals for his own use, and is supplied with all necessary apparatus. During the lecture course the laboratory classes are so arranged as not to interfere with the lectures and other college exercises. Students are urged to avail themselves of the privileges thus afforded, and, if possible, during their first course of lectures.

PATHOLOGICAL ANATOMY AND HISTOLOGY. Classes in embryology, normal and pathological histology (including the diagno-

sis of tumors, etc.), and the examination of the urine, will be formed immediately after the beginning of the session. The fee is \$10, including the use of microscope, reagents and material.

The laboratory facilities of this college are unsurpassed, and special attention is given to these important branches. The laboratory is open daily for work in histology and pathology. Each student is furnished with reagents, working table, and a separate compartment for instruments, etc. The material for use in the various courses is abundant and in available form for study.

FEES AND EXPENSES.

All fees are payable in advance, and are as follows: For matriculation, five dollars, payable each year; for the year's lectures, one hundred dollars; perpetual lecture ticket, entitling to attendance upon two or more courses, one hundred and fifty dollars. Students who have attended two full courses of lectures at this college will be required to pay only the matriculation fee. Students who have attended two full courses of lectures at other accredited medical colleges will be required to pay twenty-five dollars and the matriculation fee. Graduates of other medical schools will be admitted upon paying the matriculation fee. Dissection, ten dollars, which is required the first year and optional during other years of the course; dissecting material is free, and there are no incidentals in this department. The graduation fee is twenty-five dollars, which must be paid to the registrar before the candidate can be admitted to an examination. Courses in the chemical laboratory and in histology, ten dollars each.

The cost of living in Albany is less than in most other cities of its size. The janitor of the college keeps a list of boarding houses at which good rooms and board can be obtained at from four to five dollars a week, and by clubbing together and boarding themselves students can live comfortably and pleasantly at still lower rates. This plan has been adopted by many students, and several mess clubs are organized annually.

REQUIREMENTS FOR GRADUATION.

The candidate must be twenty-one years of age, and exhibit a certificate from a physician or surgeon, duly authorized by law to

practice his profession, that he has studied medicine and surgery after the age of eighteen under his instruction during a term of three years.

He must have attended a three years' graded course of lectures in this college, or the equivalent of the first course thereof elsewhere, and the last two courses in this college, or the equivalent of the first two courses thereof elsewhere, and the last course in this college, provided: (1) that graduates of recognized literary colleges, scientific schools or colleges of pharmacy will be allowed to present themselves for graduation at the end of their second full course if all other requirements for graduation are fulfilled; (2) that students desiring to enter the second-year class may do so if they successfully pass an examination in anatomy, materia medica, chemistry and physiology, and are deemed competent so to enter, and (3) that students who have attended a full course of lectures elsewhere, may enter the senior class on passing a satisfactory entrance examination in all the departments. Students entering the second year class in either instance as above provided, must attend the full course of lectures each year, and are examined in all the branches at the end of their second course. Students entering the senior class as above provided must attend the full course of lectures, and are examined in all the branches at its close.

He must be of good moral character.

He must deliver to the registrar, six weeks before the end of the term, a thesis written by himself on some medical subject, and be prepared to defend it at his examination. Theses must be written upon paper ten inches by eight inches in size, with a wide margin on the inside of each page.

He must pass a satisfactory examination in the several branches of medicine and surgery, final examinations being conducted chiefly in writing.

Regular and punctual attendance is required, and certificates of actual attendance given at the end of the term.

For catalogues or further information, address

WILLIS G. TUCKER, M. D., *Registrar*,
4 Lancaster St., Albany, N. Y.

December 15, 1887.

ALBANY LAW SCHOOL,

LAW DEPARTMENT OF

UNION UNIVERSITY.



THIRTY-SEVENTH YEAR.

ALBANY LAW SCHOOL.

The Albany Law School is among the oldest institutions of the kind in the Union, there being at the time of its organization but one or two other Law Schools of any reputation in the United States.

Since 1851, upwards of three thousand students have attended its lectures ; and its graduates, dispersed throughout the nation, number many of the most successful and honorable men in the profession of the law. The School, by its *alumni*, has been well represented in the Judicial, Legislative and Executive departments of government, State and National.

Its instructors have always been men of repute and standing, both for professional learning and personal character.

Among them may be named Judges IRA HARRIS, AMASA J. PARKER and WILLIAM L. LEARNED, of the Supreme Court, the late Judge WILLIAM F. ALLEN, of the Court of Appeals, and the late Profs. AMOS DEAN and ISAAC EDWARDS, the latter of whom is widely known as an author on legal subjects.

The trustees have purchased and fitted up for the use of the School a building in all respects adapted to its needs. It is pleasantly located, near the new Capitol, the Law Courts, and within a few minutes' walk of the business part of the city ; a locality from which all points of interest are readily accessible.

On the first floor of the building is situated a spacious library and study room, well lighted and warmed, conveniently fitted with desks, book cases and tables, and open to the students day and evening. This makes a very convenient and pleasant place for moot courts, club and class meetings. On the floor above is a well lighted and finely decorated lecture room, with all the appliances necessary for the comfort and convenience of students while in attendance upon the lectures.

BOARD OF TRUSTEES.

HON. WILLIAM L. LEARNED, LL. D.,
President.

CHARLES J. BUCHANAN, Esq.,
Secretary.

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Associate Judge Court of Appeals.

HON. CHARLES C. DWIGHT,
Justice of Supreme Court.

HON. JAMES C. SMITH,
Justice of Supreme Court.

HON. JUDSON S. LANDON, LL. D.,
Justice of Supreme Court.

HON. GEORGE BARKER,
Justice of Supreme Court.

HON. AMASA J. PARKER, LL. D.,
Late Justice of Supreme Court.

HON. MATTHEW HALE, LL. D.,
GEN. FRANKLIN TOWNSEND,
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HENRY H. MARTIN, Esq.,
CHARLES B. LANSING, Esq.,
HENRY Q. HAWLEY, Esq.,

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HENRY H. VAN DYCK, Esq.,
DUDLEY OLCOTT, Esq.,
MARCUS T. HUN, Esq.,
HON. AMASA J. PARKER, JR.,
GEN. JOHN F. RATHBONE.

FACULTY.

HON. WILLIAM L. LEARNED, LL. D.,
PRESIDENT OF THE FACULTY,
Equity Jurisprudence, and the Trial of Causes.

HON. HORACE E. SMITH, LL. D.,
DEAN OF THE LAW SCHOOL,
Sources of the Municipal Law, Personal Property, Commercial Law,
Contracts, Pleading and Torts.

HON. MATTHEW HALE, LL. D.,
Personal Rights, and Professional Ethics.

HENRY S. McCALL, Esq.,
Real Property, and Wills.

CHARLES T. F. SPOOR, Esq.,
Common Law, and Code, Practice.

HIRAM E. SICKELS, Esq.,
The Law of Evidence.

IRVING BROWNE, Esq.,
Domestic Relations, and Criminal Law.

NATHANIEL C. MOAK, Esq.,
Books, and Judicial Systems.

MAURICE J. LEWI, M. D.,
Medical Jurisprudence.

TERMS AND TOPICS.

Three terms constitute the school year, and complete the course of instruction when the student has had a year of preparatory legal study. A student commencing with any term, by attending that and the two succeeding ones, will complete the course, and may become a candidate for graduation; and as one term is not much dependent upon another in the study and mastery of its appropriate topics, the student may enter at the beginning of either term.

The following is the list of topics and instructors for the ensuing year:

Fall Term, 1888.

Sources of the Municipal Law,	}	HON. HORACE E. SMITH.
Personal Property,		
Contracts,		
Real Property and Wills,		HENRY S. MCCALL, ESQ.
Equity Jurisprudence,		HON. WM. L. LEARNED.

Winter Term, 1889.

Agency,	}	HON. HORACE E. SMITH.
Contracts of Sale,		
Negotiable Instruments,		
Partnership,		
Insolvent and Bankrupt Laws,		
Suretyship and Guaranty,	}	
The Law of Evidence,		HIRAM E. SICKELS, ESQ.
Domestic Relations,		HON. WM. L. LEARNED.

Spring Term, 1889.

Bailments,	}	HON. HORACE E. SMITH.
Insurance,		
Corporations,		
Pleading,		
Torts,		
Medical Jurisprudence,		MAURICE J. LEWIS, M. D.
Common Law, and Code, Practice,		CHAS. T. F. SPOOR, ESQ.
Criminal Law,		IRVING BROWNE, ESQ.

Professors Hale and Moak will lecture during the year, at times suiting their convenience.

In addition to the prescribed course, distinguished members of the Albany Bar occasionally favor the School with an evening lecture upon topics of special interest to the students.

METHODS AND MEANS OF INSTRUCTION.

LECTURES.

Two Professors, and some portion of the time three, lecture and examine daily, except Saturday, throughout the course.

Most of the lectures are oral, and are expositions of legal principles with illustrations and applications, including citations from, and references to, the latest adjudged cases. They are also accompanied by such hints and suggestions as are deemed best calculated to enable the mind more thoroughly to master and retain them.

The Faculty have, however, a higher aim than simply teaching young men the Law. They also use their best endeavors to teach those who are intending to enter the profession to be *Lawyers*. This is felt to be an arduous and difficult task. It is training the mind to a right use of its own faculties. It is giving it a power over its own resources, and enabling it fully to avail itself of its own stores of knowledge.

This is sought to be accomplished in a variety of ways—principally, however, by accustoming the young man to do that *as a student which will afterwards be required of him as a lawyer*.

The practical lawyer owes his success, in a great measure, to his quickness and accuracy in *applying legal principles to the facts of the case*. This the student here learns in the outset, examining the reported cases referred to in the lectures to sustain the principles laid down, and by his practice in the moot courts.

EXAMINATIONS.

On Wednesday of each week, the entire class is examined orally upon the topics of the lectures during the past week, when all matters not thoroughly understood are fully explained.

In addition to daily examinations and the weekly quiz, written examinations are held at the close of each term, which are so conducted as to aid the student in recalling, stating and fastening upon his memory the leading principles of the various subjects embraced in the curriculum.

MOOT COURTS.

The Moot Courts are another feature of importance to be noticed. Questions or causes, previously given out, are here argued by four of the students. These questions or causes are either taken from, and designed to illustrate some vexed points arising in, the lectures, or from a known state of facts, or they are real causes pending before the courts.

Upon the conclusion of the argument, and the reading of an opinion by a student previously appointed for the purpose, the cause is given to the class to decide. After the decision by the class, the presiding professor gives his views on the question involved, and on the correctness or incorrectness of the opinion. Two of these courts are held each week. By judiciously pursuing this course, varied in such respects as experience may suggest, it is confidently expected that the student may be essentially aided in his efforts to become a ready, fluent and correct extemporaneous speaker, and that he may also acquire good habits of speaking—learning never to sacrifice sense to sound, or solid argument to showy declamation.

SPECIAL MOOT COURTS AND CLUBS.

In addition to these class exercises, in which all the students will be required to participate, it will be optional with them to organize and conduct as many special Moot Courts and debating clubs for the practice of forensic eloquence as they may think proper, and all reasonable facilities will be afforded them for these purposes.

Of these facilities the students largely avail themselves. Besides the Associated Congress for debating general questions, the students form clubs consisting usually of from fifteen to twenty members, which are devoted exclusively to the discussion of legal

questions. Every evening in the week, except Saturday and Sunday, may be occupied by the meeting of one of these clubs. Here are presented good opportunities for the discussion of legal principles, and of learning their proper application. The student will feel under no restraint, as he is arguing only in the presence of his associates whom he has himself assisted in selecting. The foundations are here laid for subsequent discussion in the class. The library, easily accessible both to the club and class, adds greatly to these facilities, since it affords the means of bringing the cases relied upon by each side under immediate critical examination and discussion.

PRACTICAL INSTRUCTION.

A prominent and important feature of the instruction is its *practical character*. While the Faculty, in their respective departments, insist upon a thorough discussion and mastery of principles, they aim to train and equip the student for a successful use of his powers and knowledge in professional life. Their own experience—which with some of them has been large and varied both in the Federal and State Courts—enables them to give such instructions, and make such practical suggestions as will prove of great service to the student in the practice of his profession, saving him, it may be, from mortifying mistakes and disastrous failures.

Judge Learned's lectures on the "Trial of Causes" are eminently practical and useful, embracing, among other things, preparation for the trial, examination and cross-examination of witnesses, objections and exceptions, "summing up" to the jury, and professional etiquette.

Professor Moak gives valuable and much needed instruction in regard to books, their selection, merits and use; and also makes a concise and comprehensive presentation of the history, organization and jurisdiction of courts, both in England and the United States.

Professor Hale will discuss the important, but much neglected subject of "Professional Ethics."

THE READING RECOMMENDED.

It is desirable that the student be furnished with as many approved text-books as he can command, which he may consult at

his room in connection with the lectures, and use in his investigation of questions arising for discussion in the clubs and Moot Courts.

A close and critical examination of the leading cases referred to in the lectures is also especially recommended. These cases are cited to illustrate and apply to their appropriate facts the legal principles involved in the discussions; and a careful examination of them in connection with the lectures will greatly aid the student in acquiring the power of accurate discrimination and a proper application of principles.

This species of reading, so different from that ordinarily pursued by the student in a law office, serves to fix the principles firmly in his mind, familiarize him with their application, and fit him for successful practice.

FACILITIES FOR READING AND STUDY.

For the course of reading recommended, the following facilities are afforded: *First*, The law library of the school, which is a well chosen, good working library, containing the leading reports and text-books, and is accessible to the students day and evening. *Second*, The law library of the State, the best selected and most extensive in the Union, to which students are permitted access for reference, under such rules and regulations as will insure its proper use, and secure to the State officials, the judges and members of the legal profession that full and free access to which at all times they are entitled. *Third*, There are several first-class law book publishers in the city, who keep an extensive assortment, and furnish students of the Law School at reduced prices.

Students not able, or not wishing to purchase largely, may, by an arrangement among themselves, combine their resources in the purchase of text-books, and so enjoy the use of a large number at a decreased cost to each.

LOCAL ADVANTAGES.

The local advantages of the city of Albany as the seat of a professional school cannot be overrated. It is the capital of one of the leading States in the Union, whose Legislature is in session

here for the third part of every year ; it is easily accessible, remarkably healthful, and the scene of great business and professional activity. It is large enough to afford its inhabitants all the means of culture and recreation naturally to be looked for in a city, while it is not so large as to make the cost of living burdensome, even to persons of extremely limited means.

The opportunities for witnessing all the varieties of legal practice and styles of argument are much greater in the city of Albany than in any other place of the same size.

The following courts are held here during each year, viz. : five terms of the County Court and Court of Sessions ; four Circuit Courts and Courts of Oyer and Terminer ; three sessions of the General Term of the Supreme Court, being the appellate branch of said court ; twelve regular Special Terms of the Supreme Court for motions and arguments of demurrers.

Besides these courts, *most of the sessions* of the Court of Appeals are held in Albany, and several sessions of the United States Circuit and District Courts.

There is scarcely a week in the year, with the exception of the months of July and August, that some court is not in session in the city. In these the law student will have an opportunity of listening to the highest and purest styles of judicial reasoning, and of forming his own upon the most faultless models.

TERMS.

There are three terms held annually, as follows :

The FIRST, commencing on the FIRST TUESDAY OF SEPTEMBER, will continue for TWELVE WEEKS, closing on Friday, the twelfth week.

The SECOND will commence on the LAST TUESDAY OF NOVEMBER, and will continue FOURTEEN WEEKS, with the exception of a vacation of two weeks, including the holidays.

The THIRD will commence on the FIRST TUESDAY OF MARCH, and continue for TWELVE WEEKS, closing on Friday of the twelfth week.

The fee required in all cases where the student pays by the single term will be \$50, payable in advance. But he may, when

he enters, pay \$130, which will be received in full for the whole course. To members of the bar, who are authorized to practice in the highest court of original jurisdiction in any State or country, the tuition is \$40 a term, or \$100 for the whole course, payable in advance. The requirement of *advance payment will be strictly enforced.*

REQUIREMENTS FOR GRADUATION.

On complying with the following provisions, the student may become a candidate for the degree of Bachelor of Laws:

1. He must sustain a good moral character; 2. Must have attended one course of three full terms at the Law School, preceded or supplemented by a year of approved legal study of law; 3. Must have sustained satisfactory examinations through the different terms; 4. Must have faithfully performed all the exercises assigned to him, and have prepared and read before the class and the Faculty, six weeks prior to the close of his attendance at the School, a thesis on some legal subject connected with the history, science, or practice of the law, written by himself. It must be written on alternate pages of ordinary sized letter paper, having a wide inner margin, and being in length from seven to ten pages, and must not occupy more than ten minutes in the reading.

Upon complying with these provisions, and upon payment of a graduating fee of \$10, he may, if properly qualified, receive a diploma conferring the degree of Bachelor of Laws.

The examination of candidates for graduation is partly oral and partly written, and is conducted with the same strictness as that used in the examination of candidates for admission to the bar, and upon the same and other subjects, conforming to the Rules of Court. It is the purpose of the Faculty to make the diploma of the School, in the future as in the past, true evidence of the qualifications of its graduates.

PRICE OF BOARD.

The price of board varies, according to the accommodations offered, from \$4 to \$7, including room, lodging, fuel and lights.

Two or more clubbing together, and furnishing their own provisions, may considerably reduce the ordinary expense. This plan has been adopted with very satisfactory results.

A list of boarding-houses is kept by the Dean for the information of students, and, on application to him, they will be assisted in securing satisfactory accommodations.

For circulars or further information address

HORACE E. SMITH, LL. D.,

DEAN OF ALBANY LAW SCHOOL,

ALBANY, NEW YORK.

ALBANY COLLEGE OF PHARMACY.

THE ALBANY COLLEGE OF PHARMACY was created by act of the Board of Governors of Union University, June 11, 1881, and constitutes the *Department of Pharmacy of Union University*. It was incorporated as the "Albany College of Pharmacy," August 27, 1881, and now enters upon its eighth year under the most auspicious circumstances.

The exercises of the college are held in the Albany Medical College building, on Eagle street, distant but a block from the new Capitol. The lecture-rooms and laboratories of this commodious and well-arranged building are perfectly adapted to the needs of the College of Pharmacy, and furnish to the faculty the very best facilities for imparting instruction. The lectures are delivered in the chemical lecture-room on the first floor, adjoining which is the large and well-fitted chemical laboratory, where instruction is given to the classes in practical chemistry. The collections in the different departments have been greatly increased and afford the professors ample facilities for the illustration of their lectures.

The previous general education of a student in any college has much to do with the amount of benefit to be derived from the college course, and in justice to the student and the college itself, this institution, in connection with others of the teaching colleges of pharmacy, will now require of those entering as regular students for the course, a knowledge of the ordinary English branches as taught in the grammar schools of this State.

The examination of candidates for graduation is conducted by a special board representing the trustees. These examinations are oral and conducted more with a view to ascertain the practical than the theoretical fitness of the student for his future work as a pharmacist. Quizzes by each professor on the subjects lectured upon will be held at stated intervals throughout the course with a view of stimulating continued study on the part of the student, and to aid in a thorough comprehension of the principles taught.

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PRELIMINARY EXAMINATION.

All applicants for admission to the regular course of lectures of this college will be required to pass a preliminary examination, or present a grammar school certificate entitling the holder to enter a High school, or other satisfactory written evidence of attendance at an academy, equal in grade to the High schools of this State. A knowledge of Arithmetic, Geography and Grammar, as far as is taught in the grammar schools of this State, and entitling the possessor to enter a High school of the State, will be required.

THE ANNUAL LECTURE TERM.

The Annual course of instruction in this college consists of six or more lectures each week during a period of five months, together with practical laboratory work, etc. The next course opens on Monday evening, October 1, 1888, and lectures will be delivered every week day evening thereafter, except upon Saturdays, when the hour is at two o'clock P. M.; and upon legal holidays and during the week intervening between Christmas and New Year's day. The course is graded and extends over two years; students being divided into junior and senior classes, consisting of first and second year students respectively. The lectures to the senior class are given upon Monday, Wednesday and Friday evenings, and to the junior class upon Tuesday and Thursday evenings, and Saturday afternoons, but students are entitled to attend all lectures, without extra expense.

ORDER OF LECTURES, ETC.

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8 to 9:30 P. M. Sen. Lect. Chemistry.	9 to 10 A. M. Lab. Class.	8 to 10 P. M. Sen. Lect. Pharmacy.	8 P. M. Jun. Lect. B'y & Mat. Med.	8 P. M. Sen. Lect. B'y & Mat. Med.	2 P. M. Jun. Lect. Chemistry.
	8 P. M. Jun. Lect. Pharmacy.		9 P. M. Lab. Class.	9 P. M. Sen. Lect. Vol. Analysis	3 P. M. Lab. Class.

REQUIREMENTS FOR GRADUATION.

The diploma of this college confers the degree of GRADUATE IN PHARMACY (Ph. G.). Applicants for this degree must be at least twenty-one years of age, of good moral character, have attended two full courses of lectures (one of which shall have included laboratory practice) in this college, or the last course in this college and the first in some other college of pharmacy or corresponding institution where the same branches are taught, provided there be no college of pharmacy in the locality; have had, inclusive of the time of attendance at this college, four years' practical experience with some reputable and competent pharmacist; have presented to the faculty an original thesis on some subject appertaining to pharmacy; have passed a satisfactory examination, and have paid all fees as hereafter stated.

FEES FOR TUITION.

Matriculation Fee (paid but once, but ticket required each year).....	\$3 00
Lecture Tickets, full course (per session).....	30 00
Laboratory Fee (one course required).....	15 00
Graduation Fee	10 00

For the Catalogue of the Department and further information address ALFRED B. HUESTED, M. D., *Secretary*,
144 State street, Albany, N. Y.

DUDLEY OBSERVATORY.

The Dudley Observatory was incorporated by the Legislature in March, 1852. It was named in honor of Charles E. Dudley, as an acknowledgment of the munificent contributions made to its endowment by his widow, Mrs. Blandina Dudley. Professor Mitchel selected the site, and Gen. Stephen Van Rensselaer gave the land on which the Observatory building was erected. The trustees afterwards purchased additional land, amounting in all to eight acres, about half a mile north of the Capitol. The building was completed in 1854, from plans furnished by Professor Mitchel, and the Observatory was inaugurated on the 28th of August, 1856, at the meeting of the American Association for the Advancement of Science.

Mrs. Dudley's endowment fund of over \$100,000 has recently been greatly increased by donations from other friends of the institution. This has enabled the Observatory to furnish itself with the best instruments manufactured in this country or in Europe; of these the Olcott Meridian Circle is worthy of especial note. Since its connection with Union University, an entire reorganization of the Department has taken place, and all of the buildings and scientific apparatus belonging to the Observatory have undergone important improvements. Visitors are admitted only on Tuesday evenings, from 8 o'clock to 10, and on passes obtained from members of the Board of Trustees. Instruction is given to special students. For further information address

PROF. LEWIS BOSS, A. M.,

Director of the Dudley Observatory,

Albany, N. Y.

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